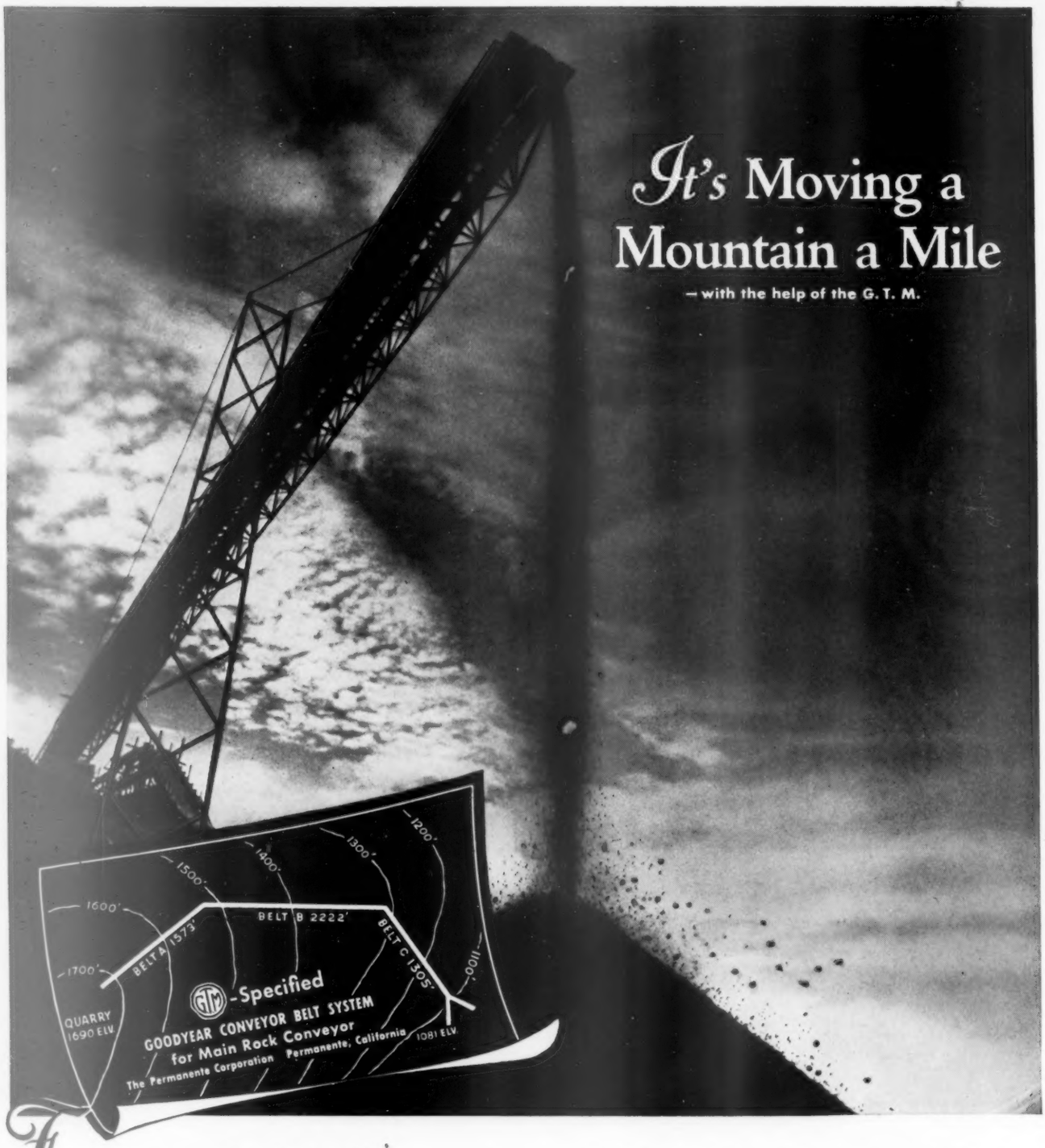
LIBRARY OF CONGRESS
JUL - 6 1940
PERIODICAL DIVISION

ROCK PRODUCTS AND QUARRY

JULY, 1940

ANNUAL CEMENT-MILLS NUMBER

TN1
.P65



It's Moving a Mountain a Mile

— with the help of the G. T. M.

From high up a rugged California mountain comes the stream of limestone rock you see here cascading from the end of a Goodyear conveyor belt — one of the most remarkable belt hauls in the world. Built to transport millions of tons of rock to be used in manufacturing cement for the gigantic Shasta Flood Control Dam, the conveyor winds up and down the sides of the mountain, swooping up-hill and down-dale like a great roller coaster. Under impetus of a 700-ton-per-hour down-hill load the belts drive generators that supply much of the electricity used for excavating and primary crushing of the rock. Completely equipped with belts specified by the G.T.M. — Goodyear Technical Man — this system proves the economy of conveyor haulage over terrain where other transport methods cost prohibitively. If you have bulk tonnage to transport, either a few feet or a score of miles, it will pay you to consult the G.T.M. Write Goodyear, Akron, Ohio, or Los Angeles, California — or phone the nearest Goodyear Mechanical Rubber Goods Distributor.

THE GREATEST NAME IN RUBBER

GOODYEAR

PIONEER
Foto Facts
No. 8

Ernest Loyd, Contractor, of Fort Worth, Texas, realized that he could crush more rock and make more money if he could feed his primary crusher more efficiently. The entire operation of his plant was being delayed because big rocks would bridge over and not go into the crusher . . . because large rocks had to be forced in with crow bars . . . because he did not have control of the feed and first the crusher was choked and then it ran empty . . . and because small material went thru the crusher.

QUARRY PLANT PRODUCTION *increased by* TRAVELING GRIZZLY FEEDER

To answer these problems, Ernest Loyd selected the New Pioneer Traveling Grizzly Feeder, mounted on a truck to feed his 24 inch by 36 inch Pioneer Primary Jaw Crusher.

The feeder has a platform twelve feet wide and ten feet long so a whole truckload of rocks can be dumped at one time. The feeder consists of a series of bars which convey the big rocks to the crusher but allow the small material to fall thru and go directly to the conveyor under the crusher. The feeder is controlled by a clutch on the operator's platform so the crusher can always be kept full without choking and there is no bridging over to leave the crusher empty.

When rocks that are too big for the crusher are dumped on the feeder, the clutch is thrown out, the feeder stopped, the rock is broken with sledges, and the feeder started up again with no delay to the crusher. A quarry plant can only produce as much material as is fed to it and the amount fed to the plant depends first on the feed to the primary crusher.

The operator on Ernest Loyd's crushing plant estimated that they had increased their production between 20 and 25% by using the Pioneer Traveling Grizzly Feeder.

PIONEER ENGINEERING WORKS
1515 Central Avenue, Minneapolis, Minn., U. S. A

PIT AND QUARRY, July, 1940, Vol. 33, No. 1. Published monthly by the Complete Service Publishing Company, 538 South Clark Street, Chicago, Ill. Subscription price $1 for 1 year in the U.S. and possessions, Canada, Central and South America; elsewhere $1 additional for each year. Single copies 20 cents. Entered as second-class matter February 28, 1932, at the Post Office at Chicago, Ill., under the act of March 3, 1897.

Modern Aggregate Plants . . . by TELSMITH

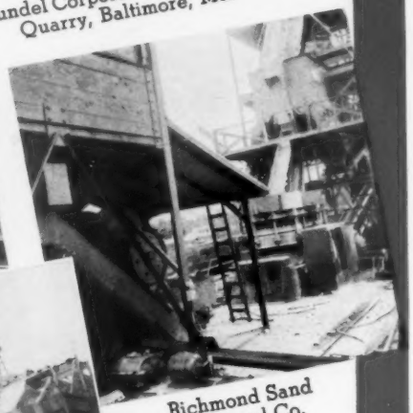
Like hundreds of Telsmith plants all over the world, these new rock crushing and gravel washing plants have operated smoothly, efficiently and profitably right from the start. A Telsmith plant means the latest in equipment—crushers to bin gates—Telsmith-designed-and-built for extra staying power, greater flexibility and capacity, lower operating and upkeep costs. And Telsmith *Balanced* Engineering Service and centralized responsibility fits that plant to your own particular needs.

Write for Bulletin EP- 15

Pontiac Stone Co.
Pontiac, Ill.

Crystal Concrete Products Co.
Braintree, Mass.

Arundel Corporation, Woodberry
Quarry, Baltimore, Md.



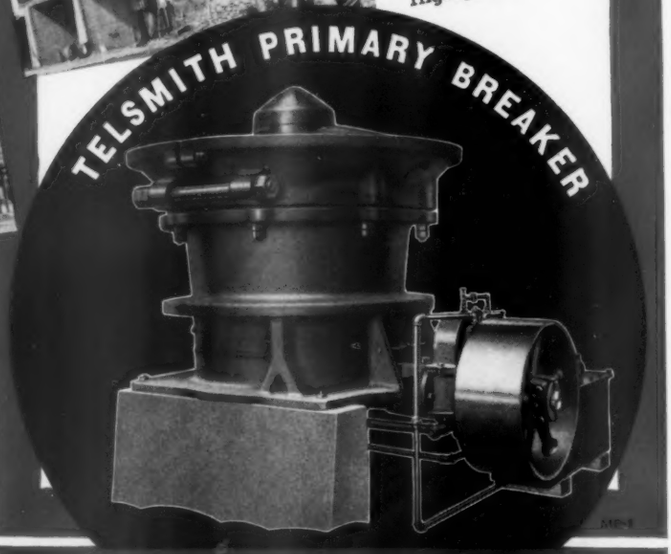
Richmond Sand
& Gravel Co.
Richmond, Va.

Arlington Stone
Company
Leesburg, Va.

Highspire
Sand & Gravel Co.
Highspire, Pa.

Kelly Run Stone Co.
Wilkes Barre, Pa.

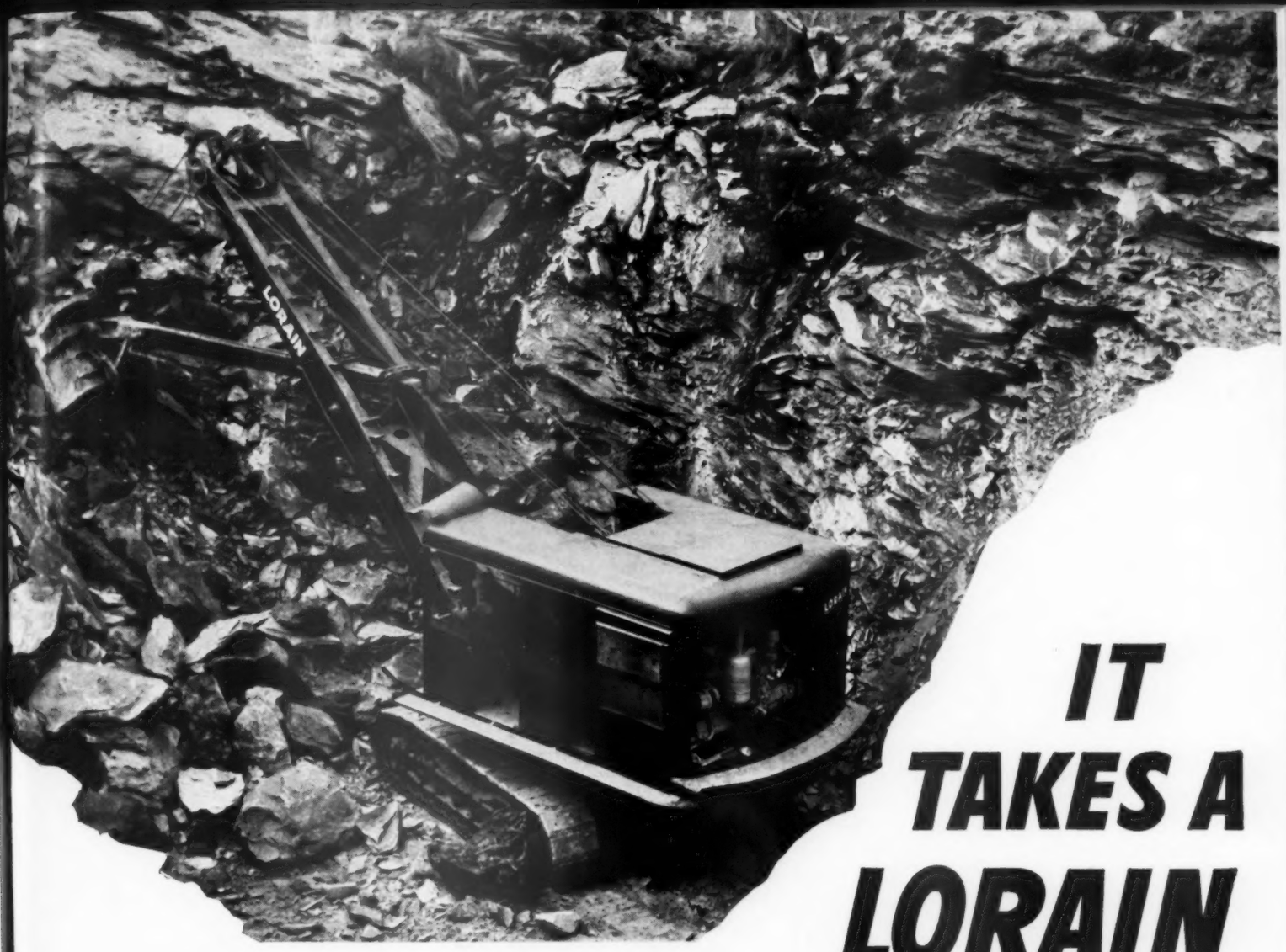
Kentucky Stone Co.
Irvington, Ky. plant



SMITH ENGINEERING WORKS, 504 EAST CAPITOL DRIVE, MILWAUKEE, WISCONSIN

50 Church Street, New York City · 211 W. Wacker Drive, Chicago, Ill. · 713 Commercial Trust Bldg., Philadelphia, Pa. · 81 Binney St., Cambridge, Mass. · 412 Westinghouse Bldg., Pittsburgh, Pa. · 7216 Euclid Ave., Cleveland, Ohio

Wm. Wheeler Equip. Co., Columbus, Ohio · Brandeis M. & S. Co., Louisville, Ky. · L. V. Finley & Son, St. Louis, Mo. · Roanoke Tractor & Equip. Co., Roanoke, Va. · Canadian Vickers, Limited, Montreal · Gordon Russell, Ltd., Vancouver



IT TAKES A LORAIN TO STOMACH ROCK LIKE THIS

Run your experienced eyes over this rock job, Mr. Contractor. It's a bruiser from start to finish but a swell spot to test a shovel's guts. Strains, stresses, jolts and jars—you get them all in one big, continuous dose, here, and the machine that can take it and come back for more is capable of socking its dipper into any kind of digging, anywhere.

Does a Lorain qualify on this basis? Again your eyes will give you the answer. Notice how this shovel has cuddled right up to the rock face. It isn't waiting for the material to be delivered in easily digested chunks. It's right in there slugging it out with the toughest digging—and from all indications "The Rock" is on the ropes.

Write today for booklet titled "The Rocky Road to Success." It outlines the features of Center Drive design that put new power, strength and speed into shovel operation—lays more evidence right on the line to prove that Lorains will move rock profitably in every shape and form.

THEW CENTER DRIVE

THE THEW SHOVEL COMPANY
LORAIN, OHIO

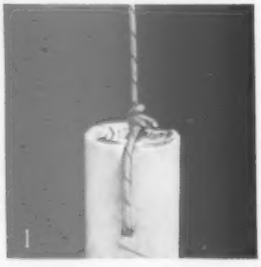
LORAINS 19 MODELS 3/8 to 2 1/2 YDS.

PREPARE THE CARTRIDGE *right*

When you work with Primacord, no cap is needed in the cartridge—Primacord is itself a detonating fuse. To prepare the cartridge, merely lace the fuse through the sides and bring it around the top in a half hitch; or thread it straight through the center and secure it with a knot at the bottom. Either method is thoroughly satisfactory.

Primacord can be used in bore holes where water or mud is present. It is a practically instantaneous blasting fuse. The powerful detonating wave travels its PETN core at 3.85 miles per second. And yet, there is an infinitesimal time delay between holes and between rows of holes that provides for relief of burden.

The Primacord Booklet is yours for the asking. Send for it today.



PRIMACORD·BICKFORD

Detonating FUSE

THE ENSIGN-BICKFORD CO., Simsbury, Conn.

Makers of Cordeau-Bickford Detonating Fuse — and Safety Fuse since 1836

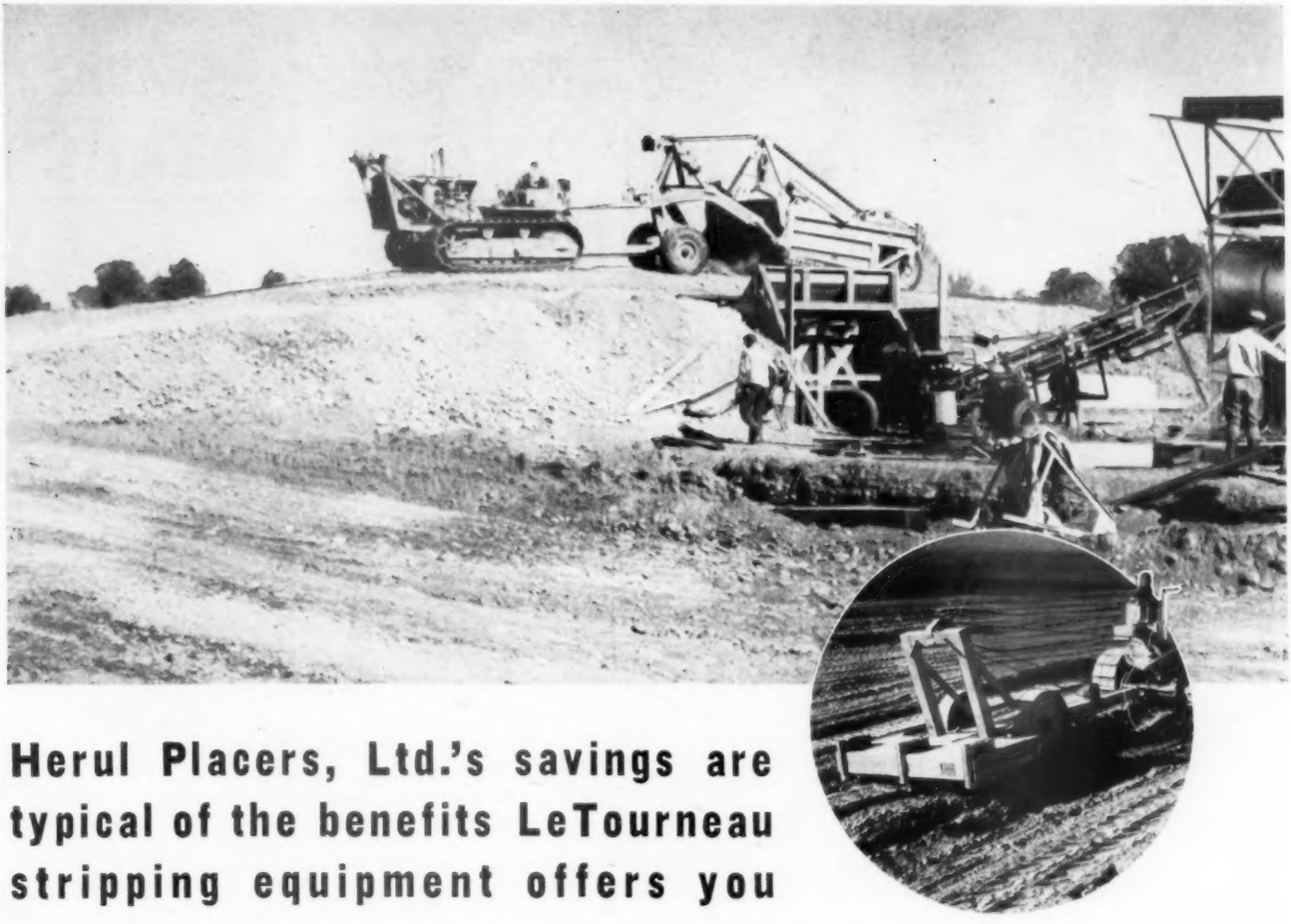
PB22

1. Tie through cartridge.
2. Half hitch branch to main line.
3. Connect main line lengths with square knot.
4. Fuse and cap on end of main line.

IMPORTANT: Branch lines should lead away from main lines at *right angles.* Avoid kinks and small loops.

LeTourneau 'Dozer, Rooter and Carryall Scraper

"... form a complete plant of efficiency"



Herul Placers, Ltd.'s savings are typical of the benefits LeTourneau stripping equipment offers you

Take fullest advantage of your tractor power to reduce aggregates handling costs all-round with LeTourneau equipment . . . as Herul Placers have done at their Camanche, California, property.

Savings started with their LeTourneau Bulldozer building the unloading ramp . . . and 'Dozing gravel to the hopper. Beyond profitable 'Dozer distances, a LeTourneau Carryall Scraper was added to bring in gravel over a widely scattered area . . . maintained peak production at all times by stockpiling the surplus at the hopper to be 'Dozed in as needed. This Carryall Scraper method, you know, brings in only selective material . . . saves the time and expense of running barren material through the washer.

. . . and when hard, cement-like gravel is encountered, a LeTourneau Rooter changes places with the Carryall on the same tractor . . . provides complete fragmentation for fast, easy Carryall and 'Dozer pick-up . . . extends tractor usefulness and saves blasting. "Together, they form a complete plant of efficiency," sums up W. J. Loring, company official.

You can benefit . . . the same as Herul Placers . . . and dozens of other leading properties are. Invite your LeTourneau-"Caterpillar" dealer to make a study of your pit and quarry problems. He's equipped to develop a cost-cutting system with these flexible stripping tools that will give you the most profit from your materials handling efforts . . . and he will back his recommendations with demonstration proof on your own property. Ask him NOW! R. G. LeTOURNEAU, INC., Peoria, Ill., Stockton, Calif. Cable address: "Bobletorno."

LETOURNEAU

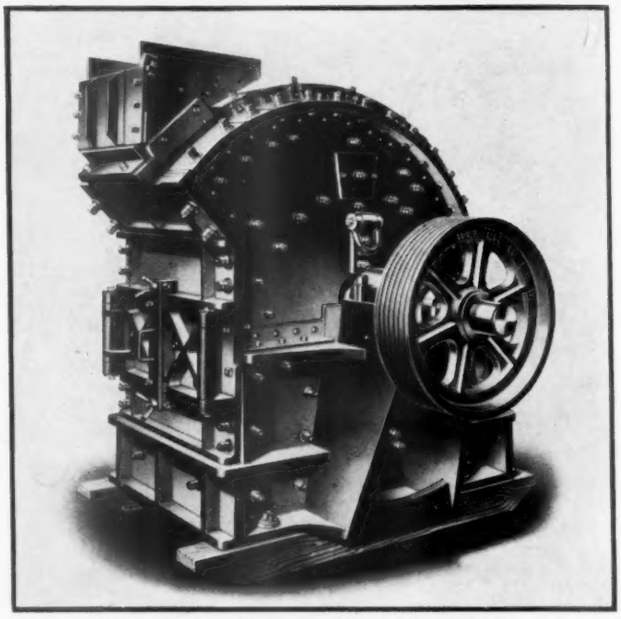
Stripping **EQUIPMENT**

CARRYALL * SCRAPERS, ANGLEDOZERS,* BULLDOZERS, ROOTERS,* POWER CONTROL UNITS, DRAG SCRAPERS, PUSHDOZERS, SHEEP'S FOOT ROLLERS, BUGGIES,* CRANES, TREEDOZERS.

* Name Reg. U. S. Pat. Off.

THE *Dawn* OF AN ERA

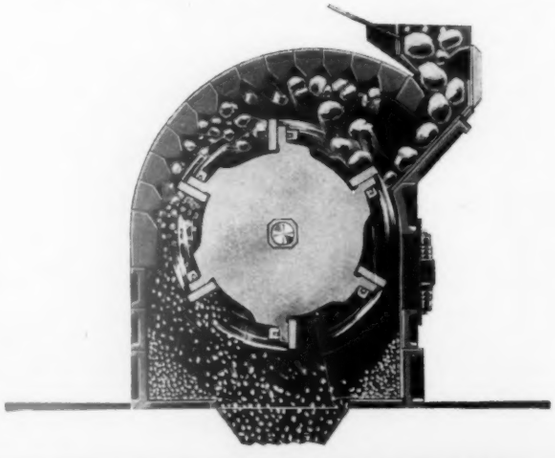
Introducing the Cedarapids "KUBIT" *IMPACT* BREAKER



Licensed Under U. S. Patent No. 1996485

WHAT IS THE "KUBIT" IMPACT BREAKER?

The "Kubit" Impact Breaker is a slow-speed fixed bar breaker which produces a uniform cubical product in any size required, by simple variation of speed. *It is not a hammer mill, not a jaw crusher, not a roll crusher, not a gyratory crusher — but a NEW, yet proven, machine operating on an entirely different principle.* Hundreds of "Kubit" Breakers, in service all over the world, have proven their superiority over all conventional crushers for the production of aggregate LOW IN PERCENTAGE of elongated and thin slabby pieces of material. The sensational success of this equipment in breaking stone, gravel, flint, slag and other material is due to the IMPACT principle. . . . Some of the many cost-reducing features of the Cedarapids "Kubit" Impact Breaker are: Reversible and interchangeable manganese steel impact bars — reversible manganese steel breaker bars that can be easily replaced — manganese steel body liners — heavy steel rotor — exceptionally large and dust-protected bearings — inspection doors that ensure quick access to the interior of the machine — slow speed and low horsepower — big production. This equipment is ruggedly built to give maximum performance handling all materials.



THE "KUBIT" *IMPACT PRINCIPLE*

In the "Kubit" Breaker, the stone or other material is broken solely by IMPACT. Breaker bars, rigidly fixed to a balanced rotor, throw the material with shattering force against the V-shaped impact bars, splitting the material along its natural grain. The broken pieces rebound from the impact bars to be again thrown against successive bars, as the product travels downward. The broken material leaves the machine through the large opening in the bottom of the breaker. This discharge opening is unrestricted by grid bars or screen. There are no grates to wear out.

The size of the broken material varies according to the speed of the rotor. Higher speed produces smaller material. Since there is no grinding action employed, the finished product is uniformly angular and cube shaped.

Cedarapids

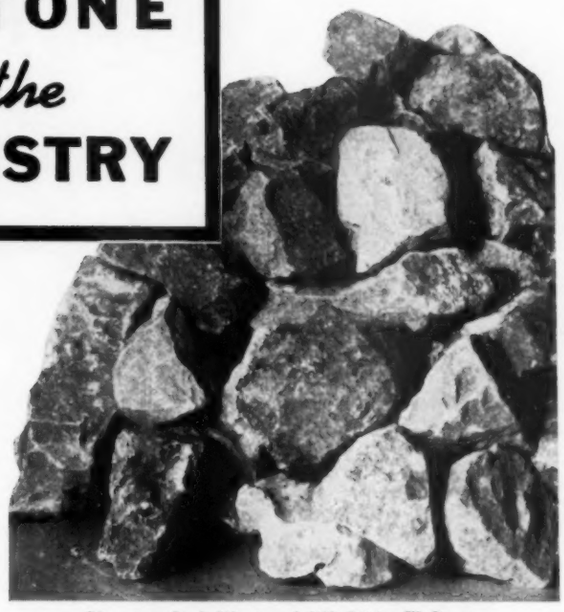
PORTABLE and STATIONARY

CRUSHING PLANTS — ASPHALT MIXING PLANTS

WASHING PLANTS — MATERIAL HANDLING EQUIPMENT

IN THE *New* STONE AGE

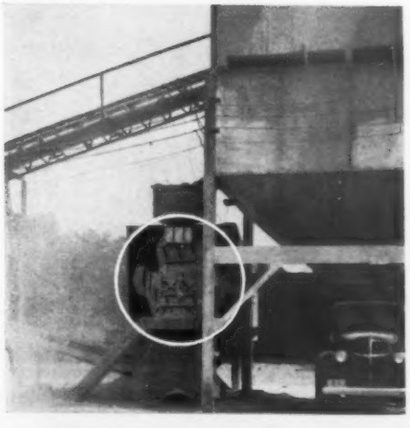
"KUBITIZED" STONE
A Life Saver for the AGGREGATE INDUSTRY



Unretouched Photo of "Kubitized" Stone Passing 1" Screen

IMPORTANT ADVANTAGES

- **All grades and sizes are cube shaped.**
- **The percentage of elongated and slabby pieces is negligible**
- **All material is broken across its weakest point, by impact, eliminating soft stone and partially fractured pieces.**
- **In "Kubitized" Gravel all pebbles are broken into cube shapes resulting in 50% longer life for road surfaces.**
- **"Kubitized" products yield super-strength concrete.**
- **"Kubitized" materials are stronger, will withstand more strain and pressure than any other aggregates for all types of construction.**
- **"Kubitized" aggregates meet the most rigid specifications of engineers.**



"Kubit" in the plant of G. G. Hill, Dexter, Missouri.

IT WILL PAY YOU TO "KUBITIZE" NOW

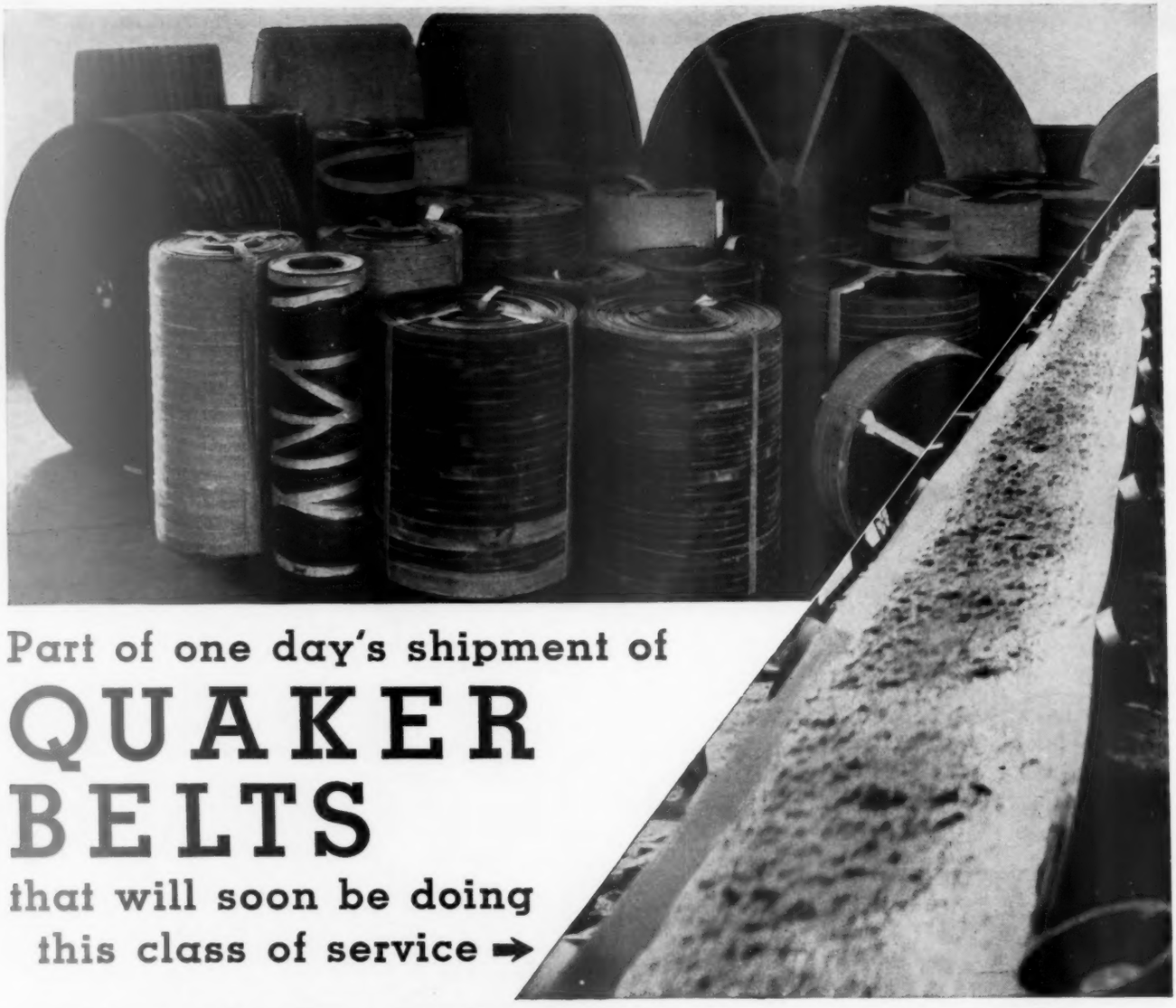
The Cedarapids "Kubit" Impact Breaker offers a solution to many problems of the rock and gravel industry. Engineers are specifying cubed material — modern construction demands this superior product — here is your opportunity to meet this demand — install Cedarapids "Kubit" Impact Breakers NOW. The Cedarapids "Kubit" makes a consistently good product to fulfill the most rigid requirements of engineers and architects on all types of construction where aggregates are employed.

Don't Wait! **Write today for complete information. Send us a 200 lb. sample of your material with specifications for finished material you want. We will "Kubitize" your sample and return it to you with a screen analysis. Let us prove that "Performance Pays."**

Member American Road Builders Ass'n.

Manufactured by
IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa

Cedarapids



Part of one day's shipment of

QUAKER BELTS

that will soon be doing this class of service ➔

QUAKER CONVEYOR BELTS

Continuously, a steady flow of Quaker Conveyor Belts are moving through our factory to their destination.

And many of these belts will be placed in use to convey sand, gravel, crushed rock and kindred materials.

There is a good reason for this ever-increasing number of Quaker Conveyor Belts. Quaker keeps abreast of changing manufacturing conditions . . . great caution is used in selecting the raw material, they must meet our set standards. The various processes of manufacture are performed by the latest improved machines. Experienced workmen, supervised by expert executives well versed in rubber manufacture, are back of every belt.

In Quaker, you really get a "super belt." Special duck . . . long-tooth friction . . . cover of "live" rubber . . . and the belt scientifically "cured." The finished product . . . a QUAKER Belt that will deliver tons and tons of material.

Make your next belt a QUAKER.

•

Our Belting Experts are available at any time to help you. Call on us to solve your Belting problem.

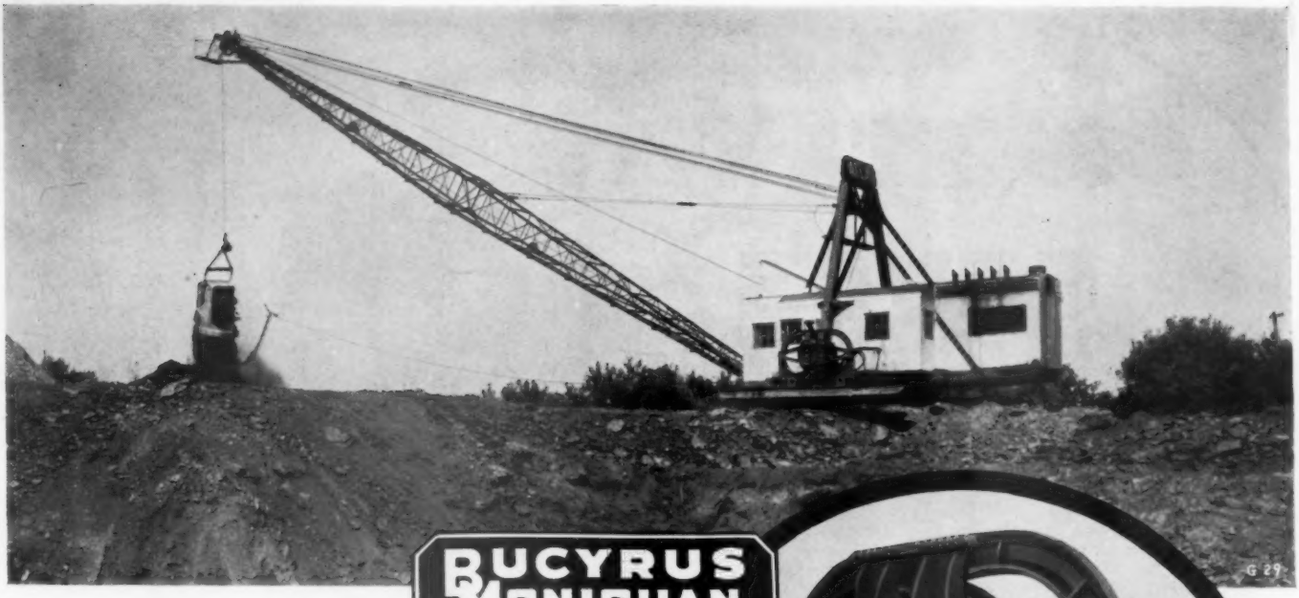
Mechanical
RUBBER GOODS
Over 9,000 Products

QUAKER RUBBER CORPORATION

OVER 50 YEARS CONSISTENT QUALITY

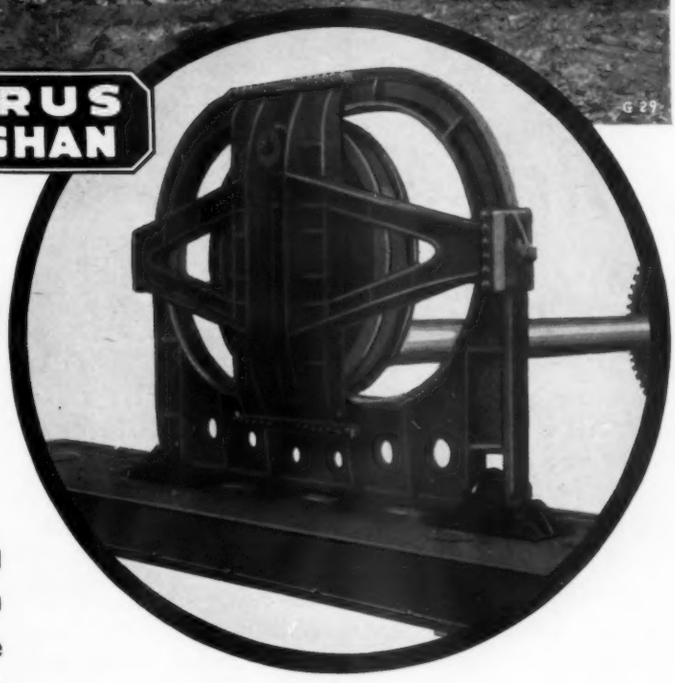
(formerly QUAKER CITY RUBBER COMPANY)

PHILADELPHIA · ***NEW YORK*** · ***CHICAGO*** · ***HOUSTON*** · ***SAN FRANCISCO***



BUCYRUS MONIGHAN

A Walking Action That Lasts!



The exclusive Bucyrus-Monighan Rolling Cam gives a walking action that is smooth and positive; that "cushions down" the machine at the end of each step with an ease that means long life. The construction of the Rolling Cam is such that Bucyrus-Monighan walking maintains its efficiency even after long hard service, without need for constant adjustments. Here's the reason: The walking action is governed by the free-working cam rolling in its track, guided by deep double flanges on the cam. The few moving parts are designed with liberal clearance between cam and track—effectiveness is not impaired with long use. This has been proven repeatedly in the field by Bucyrus-Monighans which step out as positively, as surely and as gently after million-yard service as they did when they were new.

Sold by

Bucyrus·Erie

SOUTH MILWAUKEE, WISCONSIN

CONSTANT GAUGE HOLES

And why Timken Bits drill them . .

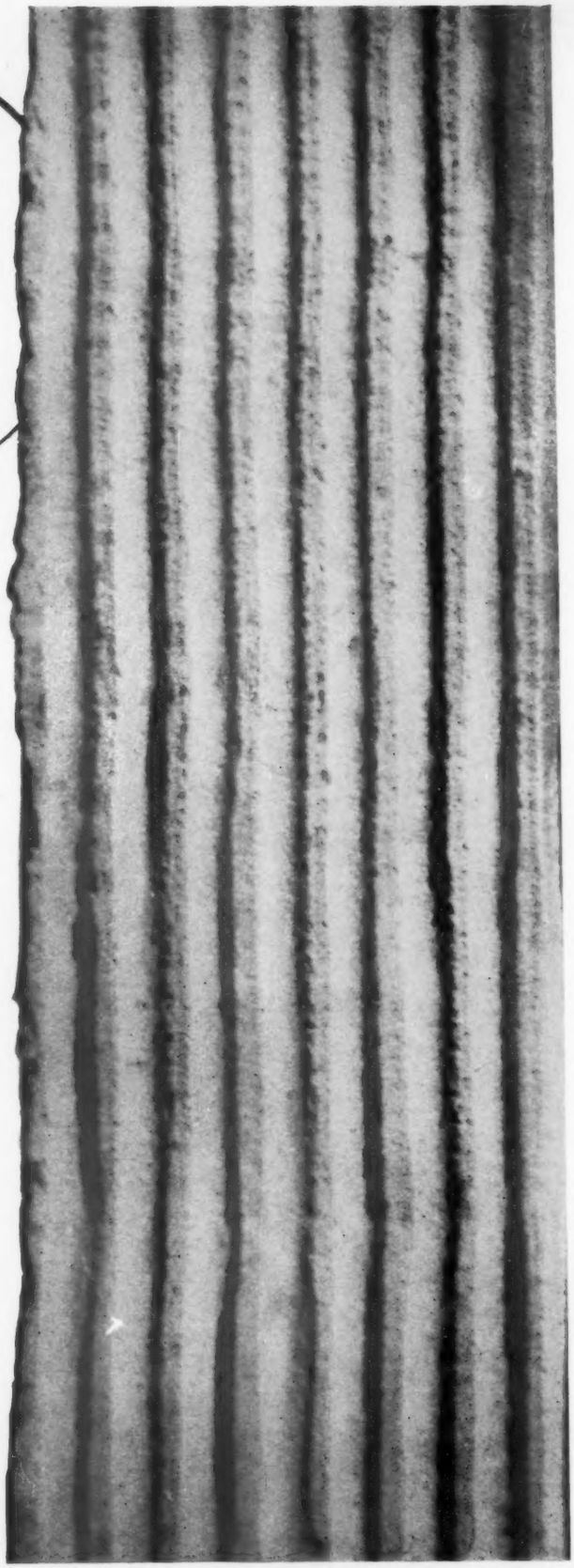
"Constant gauge holes" through the use of TIMKEN Rock Bits is the answer to every dimensional stone quarry operator's prayer. For constant gauge holes greatly facilitate subsequent broaching operations and moreover result in minimum loss of material through even fracture.

Here's why TIMKEN Removable Rock Bits can drill constant gauge holes *economically*. When the bit begins to get dull—it is removed and a sharp bit of identical gauge is attached to the same steel. Thus, it is necessary to carry only a small steel inventory whereas in the case of forged steel bits the inventory necessary to obtain constant gauge holes is prohibitive.

If you are in the dimensional quarry business and are not drilling constant gauge holes, why not let us demonstrate what TIMKEN Bits will do? Write us immediately. No charge, of course.

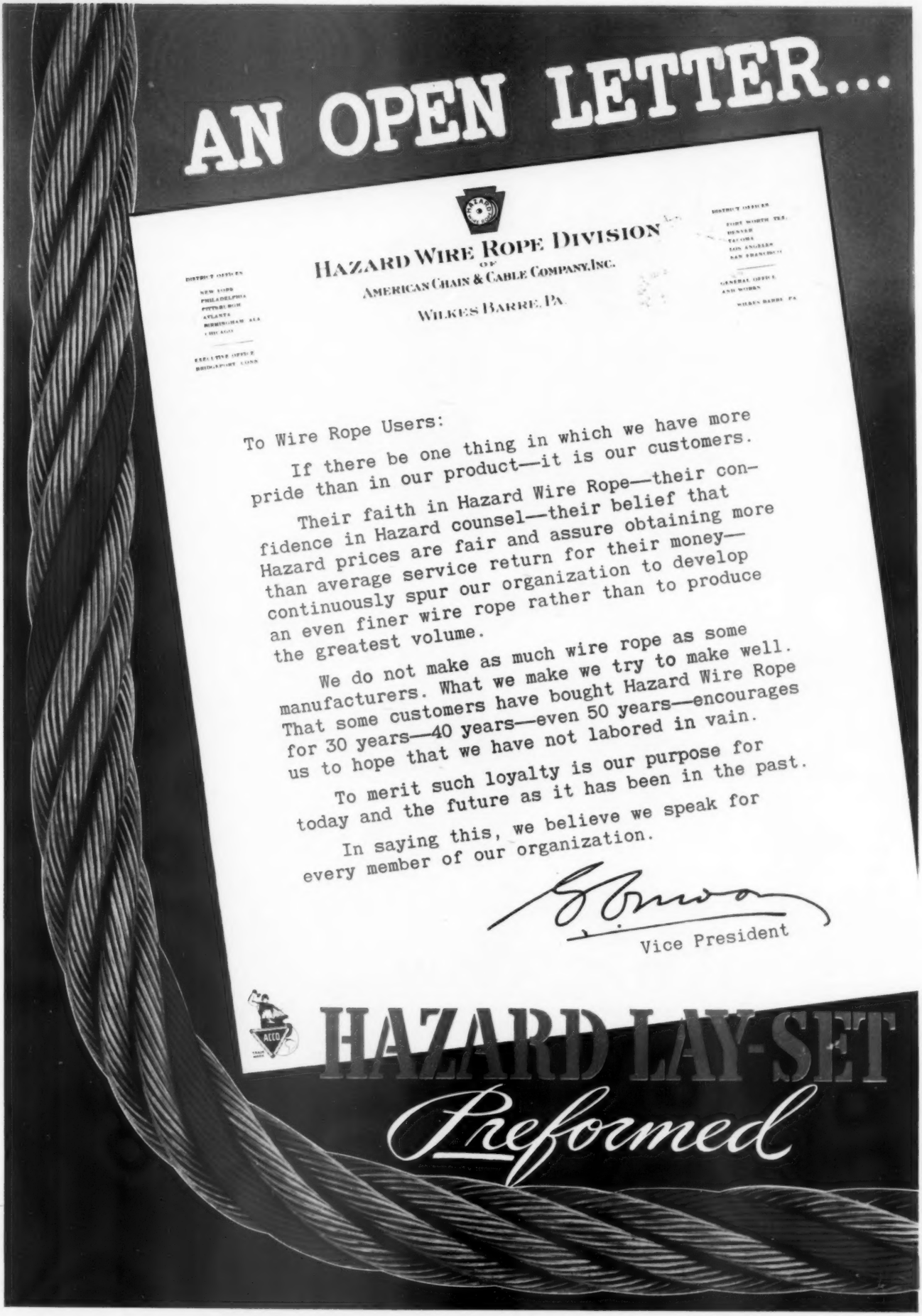
TIMKEN
ROCK BITS

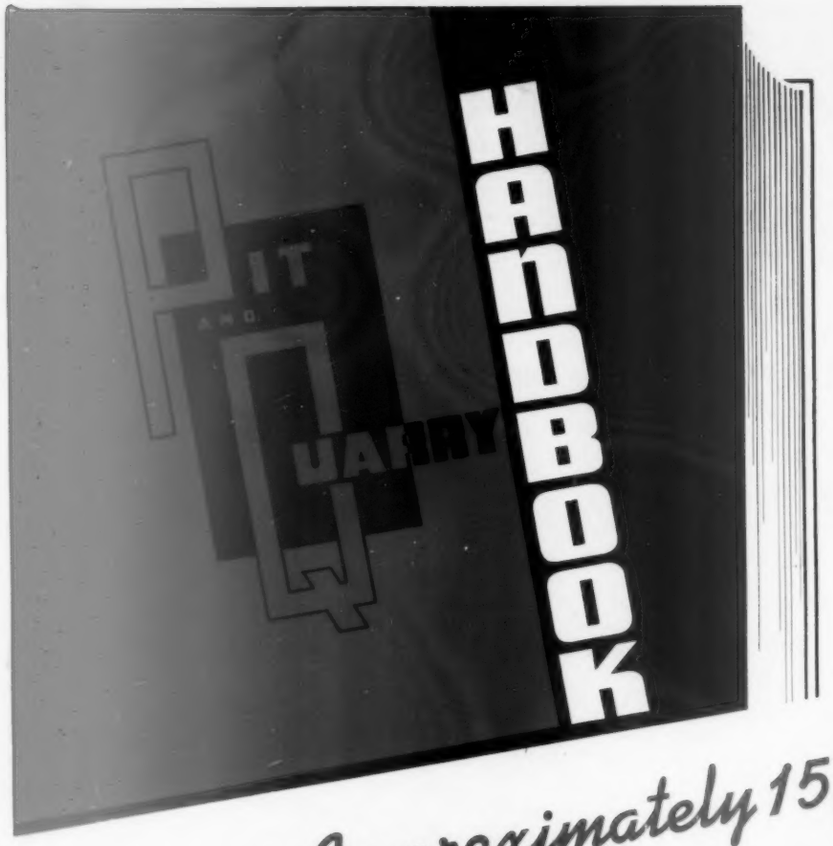
Manufacturers of TIMKEN Tapered Roller Bearings for automobiles, motor trucks, railroad cars and locomotives and all kinds of industrial machinery; TIMKEN Alloy Steels and Carbon and Alloy Seamless Tubing; and TIMKEN Rock Bits.



Sample of cores left by drilling constant gauge holes with TIMKEN Bits. Note cores same size from top to bottom thus facilitating broaching.

THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO


AN OPEN LETTER...
HAZARD WIRE ROPE DIVISION
OF
AMERICAN CHAIN & CABLE COMPANY, INC.
WILKES-BARRE, PA.
To Wire Rope Users:
If there be one thing in which we have more pride than in our product—it is our customers.
Their faith in Hazard Wire Rope—their confidence in Hazard counsel—their belief that Hazard prices are fair and assure obtaining more than average service return for their money—continuously spur our organization to develop an even finer wire rope rather than to produce the greatest volume.
We do not make as much wire rope as some manufacturers. What we make we try to make well. That some customers have bought Hazard Wire Rope for 30 years—40 years—even 50 years—encourages us to hope that we have not labored in vain.
To merit such loyalty is our purpose for today and the future as it has been in the past.
In saying this, we believe we speak for every member of our organization.
Vice President
HAZARD LAY-SET
Preformed



- **Complete, accurate and up-to-the-minute Directory.**
- **Hundreds of new names; others checked and revised.**
- **Alphabetical by companies; geographical by plants.**
- **Consolidated catalogs of equipment makers.**
- **Revised and improved technical section.**

Contains Approximately 15,000 Names for Your 1940 Mailing List . . Order It Now!

Don't Waste Your Time and Postage on an Old List

The compilers of the 1940 Directory Section of Pit and Quarry Handbook have labored painstakingly to build an accurate list of all known American producers of nonmetallic minerals. Each new listing has been carefully scrutinized for accuracy and completeness. Previous listings have been revised, checked, double-checked. All appear two ways—(1) alphabetical by companies, (2) geographical by plants. It gives you company names, officers, location of plants, size or capacity, and names of the men who do the buying. Select the complete Handbook *and* Directory, or the convenient, flexibly-bound Directory alone. Now ready for distribution. Order NOW to insure getting one of the first copies. Use coupon below . . . we'll bill you after you get the book.

Pit and Quarry, Date.....

538 S. Clark St., Chicago, Ill.

Please send.....copies of the 1940 HANDBOOK ($10.00 per copy)

Please send.....copies of the 1940 DIRECTORY ($10.00 per copy)

☐ Check enclosed.....

☐ Send Invoice with book

Name ..... Title.....

Company .....

Town ..... State.....

Insure "Top Flight" Profits

Production, "Sky-High" Costs, "Down-to-Earth"

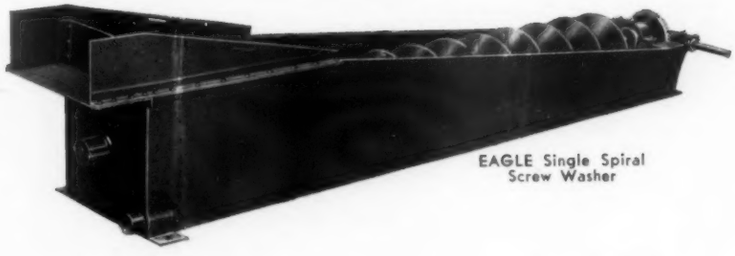
With the Famous

EAGLE EQUIPMENT

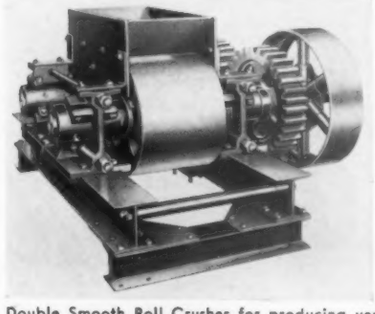
PROVED AND APPROVED FOR 68 YEARS

The "EAGLE Line" is RIGHT in Design

EAGLE "Swintek" Screen Nozzle Ladder . . . the dredger's "right hand man." Works all deposits. No pumping delays. Boosts capacity as much as 400%



EAGLE Single Spiral Screw Washer



Double Smooth Roll Crusher for producing very fine sand

Sand and gravel producers, using EAGLE Washers, are assured of a premium product that will bring top prices in the market. Eagle-processed aggregate will meet the highest specifications. Remember that you can obtain EAGLE Washers in the Paddle Log Type, or in the Spiral Screw Type, single or double.

EAGLE equipment has maintained its leadership for three generations on the basis of practical design, sturdy construction, efficient production and low maintenance. EAGLE engineers have developed many exclusive features which explain the standout performance of EAGLE units in the sand and gravel industry.

Write for detailed information and descriptive Bulletins.

EAGLE Products include: EAGLE Shale Planer, EAGLE Dry and Wet Pans, EAGLE Grinder, EAGLE Washers, EAGLE Swintek Screen Nozzle Ladders, EAGLE Roll Crushers.

EAGLE IRON WORKS
DES MOINES - IOWA

Acme Steel Co.
Ajax Flexible Coupling Co.
Allis-Chalmers Mfg. Co.
American Can Co.
American Chain & Cable Co.
American Gas Furnace Co.
American Laundry Mach. Co.
American Locomotive Co.
Anaconda Copper Mining Co.
Anchor Post & Fence Co.
Appleton Electric Co.
Armstrong Machine Works
Atlas Lumnite Cement Co.
Atlas Powder Co.
Bakelite Corp.
Baldwin Belting & Leather Co.
Baldwin-Duckworth Div.
Baldwin-Southwark Corp.
W. F. & John Barnes Co.
Bethlehem Steel Co.
Black & Decker Mfg. Co.
Blaw-Knox Co.
Brown & Sharpe Mfg. Co.
Bucyrus Erie Co.
Bullard Co.
Butler Mfg. Co.
Byers Machine Co.
Calco Chemical Co.
Canadian Ingersoll-Rand Co.
Canadian Westinghouse Co., Ltd.
Carboloy Co., Inc.
Carrier Corp.
Carter Carburetor Co.
Celluloid Corp.
Century Electric Co.
A. B. Chance Co.
Chicago Bridge & Iron Co.
Chicago Molded Products Co.
Cincinnati Bickford Tool Co.
Cincinnati Milling Machine Co.
Cincinnati Shaper Co.
Clark Controller Co.
Cling Surface Co.
Colgate-Palmolive-Peet Co.
A. M. Collins Mfg. Co.
Columbia Alkali Corp.
Combustion Engineering Co.
Continental-Diamond Fibre Co.
Copperweld Steel Co.
Cornell-Dubilier Elec. Corp.
Crown Cork & Seal Co.
Cuno Engineering Corp.
Cutler-Hammer Inc.
Detroit Rex Products Co.
Diehl Mfg. Co.
Ditzler Color Co.
Dodge Mfg. Corp.
Dole Valve Co.
Domestic Engineering Co.
Duff-Norton Mfg. Co.
DuPont Co.
Durez Plastics & Chemicals
Thomas A. Edison Co.
Ex-Cell-O Corp.
Fafnir Bearing Co.
Fairbanks Morse & Co.
Farrel-Birmingham Co., Inc.
Ferranti Electric, Ltd.
Flintkote Co.
Foote-Burt Co.
J. B. Ford Sales Co.
Foster Wheeler Corp.
Foxboro Co.
Frick Co.
Frontier Roller Bearing Co.
Fulton Syphon Co.
General Electric Co.
General Railway Signal Co.
Gisholt Machine Co.
Globe Steel Tubes Co.
B. F. Goodrich Co.
Gould Pumps, Inc.
Graver Tank & Mfg. Co.
Graybar Electric Co.
A. P. Green Fire Brick Co.
Guardian Electric Mfg. Co.
Hamilton Mfg. Co.
Hays Corp.
Heald Machine Co.
Hinde & Dauch Paper Co.
Hercules Powder Co.
Hevi Duty Electric Co.
Hilo Varnish Corp.
Hotstream Heater Co.
Hyatt Bearings Div.
Hygrade Sylvania Corp.
Independent Pneumatic Tool Co.
Ingersoll-Rand Co.
Insley Mfg. Corp.
Johns-Manville Co.
Joy Mfg. Co.
Keasby & Mattison Co.
Koehring Co.
Lamson & Sessions Co.
Landis Tool Co.
R. K. LeBlond Machine Tool Co.
R. G. LeTourneau, Inc.
Lignum-Vitae Products Corp.
Lindberg Engineering Co.
Link-Belt Co.
Locke Insulator Co.
Magnus Chemical Co.
Manhattan Rubber Mfg. Div.
Mason-Neilan Regulator Co.
Mattheson Alkali Works
Mattison Machine Works
Milcor Steel Co.
Mono Service Co.
Monsanto Chemical Co.
Morganite Brush Co
Morse Chain Co.
National Automatic Tool Co.
National Carbon Co., Inc.
National Process Co.
Nation Vulcanized Fibre Co.
Neptune Meter Co.
New England Coke Co.
New Jersey Zinc Co.
N. Y. Belting & Packing Co.
Nicholson File Co.
Northern Electric Co., Ltd.
Norton Co.
Novo Engine Co.
Ohio Brass Co.

Who finds it pays?

These are some of the 845 companies that sent representatives to the national N. I. A. A. Conference last year . . . to take part in group discussions of marketing problems . . . present case studies . . . and study the advertising methods of industrial leaders.

You are invited to the 18th annual Conference of industrial sales promotion and advertising executives in Detroit next September . . . to get new ideas and information that will make your 1941 program more effective, more profitable. Write now for details.

International Nickel Co.
Irvington Varnish & Res. Co.
Johnston & Johnston, Inc.
Okonite Co.
Osburn Mfg. Co.
Otis Elevator Co.
Owens-Corning Fiberglas Corp.
Owens-Illinois Glass Co.
Pangborn Corp.
Pennsylvania Salt Mfg. Co.
Permutit Co.
Philadelphia Quartz Co.
Pittsburgh Equitable Meter Co.
Pittsburgh Reflector Co.
Pneumatic Scale Corp., Ltd.
Read Machinery Co., Inc.
Reeves Pulley Co.
Reliance Elec. & Eng.
Republic Bank Note Co.
Republic Flow Meters Co.
Republic Steel Corp.
Resmans Prod. & Chem. Co.
R. W. Rhoades Metaline Co., Inc.
Robins Conveying Belt Co.
Rockbestos Products Corp.
John A. Roebling's Sons Co.
Rotor Tool Co.
Joseph T. Ryerson & Son, Inc.
S K F Industries, Inc.
Sangamo Electric Co.
Scott Paper Co.
Shepard Mills Crane & Hoist
Simonds Saw & Steel Co.
Sloan Valve Co.
W. W. Sly Mfg. Co.
Stanley Works
Superheater Co.
Surface Combustion Corp.
Taylor Instrument Co.
Thermoid Co.
Thew Shovel Co.
Timken-Detroit Axle Co.
Timken Roller Bearing Co.
Truscon Steel Co.
Union Carbide Co.
Union Steel Products Co.
Unitcast Corp.
U. S. Pipe & Foundry Co.
U. S. Rubber Co.
U. S. Steel Corp.
Edward Valve & Mfg. Co.
Vickers, Inc.
Edward W. Voss Machinery Co.
Wagner Electric Corp.
Walton Truck Co.
Warner & Swasey Co.
Waukesha Motor Co.
West Disinfecting Co.
West. Elec. Instrument Corp.
West Penn Power Co.
Western Precipitation Corp.
Westinghouse Elec. & Mfg. Co.
Weyerhaeuser Sales Co.
Wheeler Reflector Co.
Wickwire Spencer Steel Co.
Edwin L. Wiegand Co.
Wilson Mechanical Instr. Co.
Wiremold Co.
Wolverine Tube Co.
York Ice Machinery Corp.

18th Annual **CONFERENCE** *and Exposition*
National **INDUSTRIAL ADVERTISERS** *Association*
SEPT. 18, 19, 20 . . . DETROIT . . . HOTEL STATLER

"NITRAMON" ANSWERS

four important questions about quarry blasting

Is it economical? . . . . Yes!

"Nitramon" not only compares favorably with high strength explosives in price, but its strong, shattering action gives such good fragmentation that secondary blasting is reduced.

Is it quick and easy to load? . . . . . Yes!

"Nitramon" is packed in easily handled metal containers that cut down loading time.

Is it waterproof? . . . . Yes!

The metal containers in which "Nitramon" is sealed are water-tight. Unless they are broken, they give positive protection from water.

Is it safer? . . . . . Yes!

"Nitramon" cannot be detonated by flame, friction, impact, "Primacord" or the strongest commercial blasting cap. It can only be detonated by a special "Nitramon" primer.

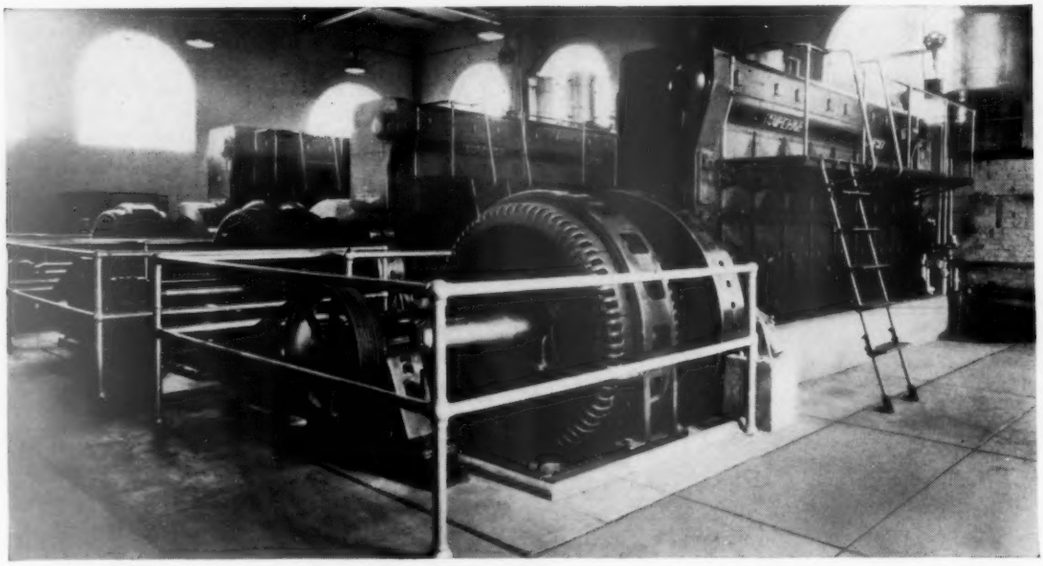
Because It Gives Better Breakage at Lower Cost, "Nitramon" Has Been Steadily Growing in Popularity Ever Since Its Introduction!

E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington, Del.

DU PONT REG. U. S. PAT. OFF. **"NITRAMON"**

THE SAFER BLASTING AGENT

What about this Diesel Business?



ANY BUSINESS that has shown steady progress during the past ten years must have within it a vital element that resists and defeats depressions, recessions, regulation, adverse taxation and discouragement.

It must also have within its character that unquenchable spark of courage and determination that enables it to safely surmount all obstacles flung in its path, and to forge ahead in spite of adverse business and competitive combinations.

Such is the Diesel engine business which, though young in years, has captured the imagination of the public at large and brought about a radical but peaceful revolution in the great American economy.

ANY PRODUCT that attains leadership in the course of such a radical development must likewise have within its makeup that vital "something" that insures success.

In the case of Diesel engines that "something" is PERFORMANCE—the undeviating measuring stick by which all engines are judged.

There is, however, a vast difference between *success* and *leadership*, just as there is between *good* and *exceptional* performance.

Leadership calls for PERFORMANCE—*plus* those essential factors that make for friendship and mutual respect in business—honesty, integrity and an unwavering determination to build a product that will, on its own merits, be classified as *Superior*.

Superior DIESELS

HEAVY DUTY MODELS: 50 to 900 H. P. 250 to 720 R. P. M.

111

HIGH SPEED MODELS: 15 to 230 H. P. 600 to 1800 R. P. M.

A PRODUCT OF

THE NATIONAL SUPPLY COMPANY

SUPERIOR ENGINE DIVISION

FACTORIES: Springfield, Ohio; Philadelphia, Pa.

SALES OFFICES: Springfield, Ohio; Philadelphia, Pa.; New York, N. Y.; Los Angeles, Cal.; Jacksonville, Fla.; Houston, Texas.

PIT AND QUARRY

Vol. 33 JULY, 1940 No. 1

CONTENTS

News of the Industry 19
Editorial: Convention Speakers 26
Industrial-Sand Producers Gather to Study Problems Confronting Industry 27
Leaders in Lime Industry Convene to Discuss Technique, Business, War 30
Cement-Plant Improvement Programs 35
Portland-Cement Plant in Argentina Serves a Rich Agricultural Region 36
Direct-Firing Coal Mills Now Serving Nazareth Plant's Eight Rotary Kilns 41
Glens Falls Adds Kiln Recuperators 43
New System of Haulage, Direct-Firing Are Installed by Medusa at Wampum 45
A Directory of Cement Company Executives 49
The Rôle of Iron in Portland Cement 63
Lawrence Improvements Reflect Gains in Operating Efficiency 69
Secondary Blasting or Gravity Breaker? 73
Gravel Pioneer Expands Scope of His Operations: Enters Related Fields 74
Truck-Mixer Fleet Grows from 2 to 7 Over Two-Year Period 91
New Block Plant at Paducah Supplies 287,000 Units to Housing Projects 92
Lightweight Florida Lime-Rock Used Successfully in Block Manufacture 95

Personal Mention 77
Labor Decisions 79
Occupational Diseases and the Law 82
Traffic News Digest 83
New Machinery and Supplies 85

Published on the first of each month for producers and manufacturers of Cement, Crushed Stone, Gypsum, Lime, Sand, Gravel and other nonmetallic minerals. Copyrighted 1940 by Complete Service Publishing Co., 538 South Clark Street, Chicago, Ill.

H. W. BAUMGARTNER
President

STANLEY A. PHILLIPS
Vice-President and Directing Editor

Field Editor:
W. E. TRAUFFER

Assistant Editor:
HARRY F. UTLEY

Circulation Manager:
W. T. KLUSSMAN

Advertising Manager:
JAMES E. MONTGOMERY
Telephone HARrison 9357
Chicago, Ill.

Eastern Advertising Manager:
W. A. WILSON
Room 430, 122 East 42nd St.
Telephone CALedonia 5-4438
New York, N. Y.

Central Advertising Manager:
W. H. SANDERSON
Auditorium Bldg.
Telephone CHerry 4432
Cleveland, O.

Advertising Representatives:
D. R. EGBERT
Chicago, Ill.

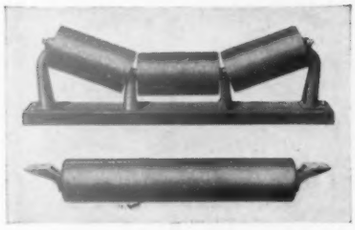
W. H. GRUBBS
Western Pacific Bldg.
Telephone Prospect 3746
Los Angeles, Cal.

DUNCAN A. SCOTT & CO.
Mills Bldg.
Telephone Sutter 1393
San Francisco, Cal.

Field Representatives:
A. C. PETERSEN
J. K. GARESCHE
H. C. FINLEY

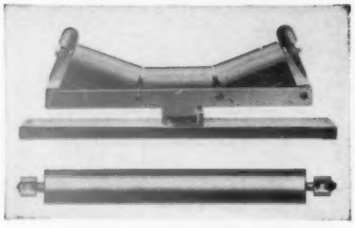
MEMBER AUDIT BUREAU of CIRCULATIONS

WITHOUT INTERRUPTING PRODUCTION YOU CAN . . .



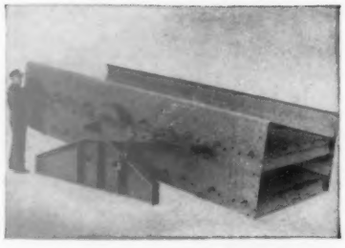
REPLACE WORN OUT CONVEYOR IDLERS

Robins Improved Roller Bearing Troughing and Return Idlers pay for themselves in savings from lower power consumption, less maintenance and uninterrupted operation. Interchangeable with "Robins" and all other idlers.



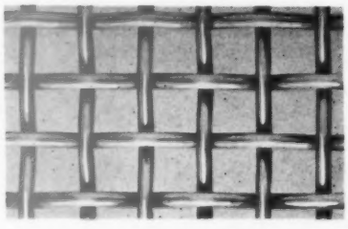
STOP THE CHAFING OF BELT EDGES

Robins Belt Training Idlers in place of a few of your standard troughing and return idlers, stop crooked running of belts and prevent expensive chafing of belt edges on structures.



GET FULL PROFIT from ACCURATE SIZING

Robins Gyrex, Vibrex and Eliptex Screens not only handle great tonnages with little power but have established a high standard of accuracy. Hundreds of size and style combinations from which to select.



REDUCE THE COST OF SCREEN CLOTH

The long life due to the inherent resistance to abrasion of Improved Super-Gyraloy screen cloth makes replacements infrequent. Available in all standard weaves and sizes.

ASSURE DEPENDABLE GATE OPERATION

Robins Bin-Gates never jam. Both single and double Standard Cut-off Gates are exceptionally rugged and at the same time inexpensive.

MATERIAL HANDLING ROBINS EQUIPMENT

ROBINS CONVEYING BELT COMPANY

Sales offices in principal cities

PASSAIC, NEW JERSEY

SEND FOR DESCRIPTIVE BULLETINS OF PRODUCTS OF INTEREST TO YOU

PIT AND QUARRY

CHICAGO

JULY, 1940

Construction Trend Still Up Despite War in Europe

Recent intensification of the European war has not yet effected any important change in the upward trend of construction in the United States, according to F. W. Dodge Corporation. The May total of construction contracts awarded in the 37 eastern states amounted to $328,914,000, largest monthly total recorded thus far in 1940, being 9 per cent. over the April figure and nearly 7 per cent. over the total for May of last year.

Most significant in last month's record was the contract figure for residential building, $145,912,000, largest residential total since August 1929, and 9 per cent over the residential figure for May, 1939. Gains in contract volume were continuous through the month, showing no diminution after the German invasion of the low countries.

Of possible significance for residential building in coming months are recent mortgage-insurance records of the Federal Housing Administration. During the five weeks ended June 1, the number of mortgages selected for appraisal increased 20 per cent. over the corresponding five weeks of last year, and their total value increased 18 per cent.; the number of mortgages accepted for insurance increased 4 per cent. and their value increased 5 per cent. There has as yet been in the F.H.A. records no indication of a falling off due to the critical war situation.

Opens New $300,000 Stone Plant in Ohio

The Lake Erie Limestone Company has started production of flux stone in its new plant southeast of Lowellville, Ohio.

Approximately $300,000 was reported to have been spent in new equipment. Modern machinery has been provided and a production of 3,000 tons of stone a day will be possible.

The Hunter Construction Company is erecting the new plant for Republic Steel Corporation, parent concern of the Lake Erie Limestone Company.

Exempt Crushed-Stone Industry as Seasonal

In accordance with the finding made public on June 11 by the Wage and Hour Division, U. S. Department of Labor, a partial exemption from the maximum hours provisions of the Fair Labor Standards Act is proposed for the northern branch of the crushed-stone industry as an industry of a seasonal nature.

If no objections are filed within a fifteen day period, the proposed exemption will become final upon publication in the Federal Register, according to J. R. Boyd, administrative director of the National Crushed Stone Association.

Cement Union Renews Manitowoc Contract

Officers of the United Cement, Lime & Gypsum Workers Local, No. 34, have announced the renewal of their contract with the Manitowoc Portland Cement Company, Manitowoc, Wisconsin.

The new contract, containing only a few minor changes, was signed by J. B. John, president and manager, and Frederic Pickford, secretary, and President Allie Schimmel and Secretary Edward A. Anderson of the union.

Ideal Purchases Gulf Portland Cement Co.

The Ideal Cement Company, Denver, Colorado, announces the purchase of the entire plant and property of the Gulf Portland Cement Company at Houston, Texas. This company will be operated as a wholly-owned subsidiary. The plant is now in charge of M. O. Matthews, vice-president, and H. B. Bolton is sales manager. Both of these men are associated with the Oklahoma Portland Cement Company, another Ideal subsidiary.

Monarch Employees Back at Work After Two-Week Strike

A two-week strike of the Monarch Cement Company's employees at Humboldt, Kansas, instituted by the International Cement, Lime and Gypsum Workers' Union, ended when union workers assembled and voted by approximately 10 to 1 to return to work.

The Monarch company issued the following statement as a basis of settlement of the labor dispute and proposed the following:

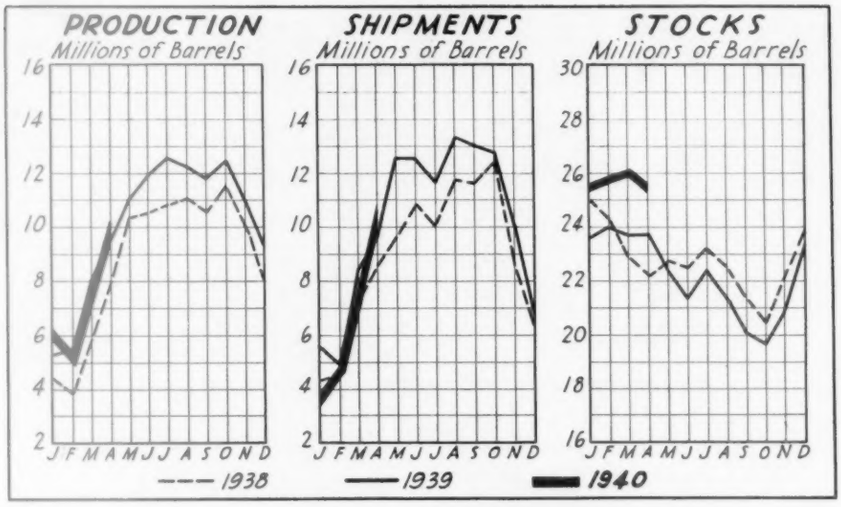
"1. The return to work of all workers employed on April 30, 1940, to their former positions at the same rates of pay, with the same hours, and similar working conditions; and that thereafter there shall be no discrimination by the company by reason of any acts or conduct between April 30, 1940 and May 14, 1940.

"2. It shall continue to be the policy of the company to recognize individual employes and representatives of a minority group of employes. Should any grievances arise affecting any member of such minority group, the policy of the company shall be to meet with the representatives of such minority group for the purpose of considering such grievances."

The proposals were submitted by the company to William Houston, commissioner of conciliation for the department of labor, and he and Jeff A. Robertson, commissioner of labor for Kansas, recommended to union leaders that the company's proposals be accepted as submitted.

The union had asked for: (1) the union shop, (2) a wage increase, (3) the check-off system and (4) seniority provisions. These did not enter into the negotiations and were lost. In the final settlement the union was recognized only as a minority group.

The plant employs around 178 men. The three 8-hour shifts were restored. Since the strike started the plant had been operating on two 12-hour shifts.



The Portland-cement industry in April, 1940, produced 10,043,000 barrels, shipped 10,829,000 barrels from the mills, and had in stock at the end of the month 25,334,000 barrels of cement, according to the Bureau of Mines. Production and shipments of Portland cement in April, 1940, showed increases of 3.8 and 12.2 per cent., respectively, as compared with April, 1939. Portland-cement stocks at mills were 6.4 per cent. higher than a year ago. The mill value of the shipments, 16,509,000 barrels, in the first quarter of 1940, is estimated as $24,697,000. According to the reports of producers the shipments totals for the quarter include approximately 813,000 barrels of high-early-strength cement with an estimated mill value of $1,454,000.

Planta Corporation to Open Several Quarries

The Planta Corporation, of New York City will re-open and operate the old Stony Creek granite quarries, at Branford, Connecticut. It was stated the work of rehabilitating the quarries has started and production will start as soon as equipment is installed.

Construction of a 3,500-ton crushing and pulverizing plant and a dock for shipment of its products is planned by the company. A six-months' lease on the Branford Coal & Lumber Company's docks has been taken pending completion of the company's own facilities.

The Planta Corporation, it was announced, has taken over the Stony Creek property by arrangement with the Chase National Bank of New York City, the present owners. It was said the company also will operate several other Connecticut quarries now owned by banks, including those at Niantic, Tylerville, Higganum and Hartford.

New Gypsum Plant Is Meeting Expectations

The National Gypsum Company's million-dollar Savannah plant is more than living up to expectations, Roy Neher, plant manager, reports as the city's newest industrial plant completed its first year of operation.

"Our output to-day is what we anticipated," Mr. Neher said, while predicting a further increase of 5 to 20 per cent. in plant production during the next twelve months.

When the company started operations in its new plant last year two 8-hour shifts were working in most departments. To-day all departments are operating on a 24-hour-a-day basis.

Last season 80,000 tons of rock were brought into port from Nova Scotia. This season the imports will amount to 150,000 tons, almost double that of last year. To haul this huge cargo some forty steamers will call at Savannah to discharge cargo.

Five Cement Companies Divide TVA Contracts

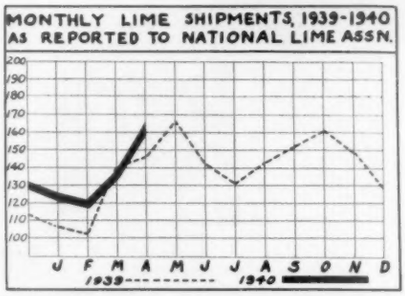
The Tennessee Valley Authority announced June 10 the extension of contracts with five cement companies for 700,000 barrels of cement to be used in construction of Fort Loudoun Dam near Lenoir City.

The contracts, totaling approximately $1,263,000, are with Volunteer Portland Cement Company, Knoxville; Pennsylvania-Dixie Cement Corporation, New York; Signal Mountain Portland Cement Company, Chattanooga; Cumberland Portland Cement Company, Cowan, Tennessee, and Lehigh Portland Cement Company, Allentown, Pennsyvania.

U. S. Gypsum Erects $100,000 Addition

The United States Gypsum Company is preparing to start building an addition to its plant at East Chicago, Indiana.

The addition, 50 by 200 feet in size, will cost about $100,000.



According to data collected by the National Lime Association, 72 companies in April, 1940, shipped 164,468 tons (91,000 quicklime; 73,468 hydrate). Reporting companies represent 51.5 per cent. of the association's total capacity of record. Based on PIT AND QUARRY's estimates for the remainder of the industry the total shipments for the month are estimated to have been approximately 320,000 tons. Shipments of lime by use and grade for April, 1940, were as follows:

Use	Quicklime (tons)	Hydrate (tons)
Agricultural	4,956	23,584
Building	20,268	32,262
Chemical	65,776	17,622
Total	91,000	73,468

New Marble Cliff Lime Plant Soon to Open

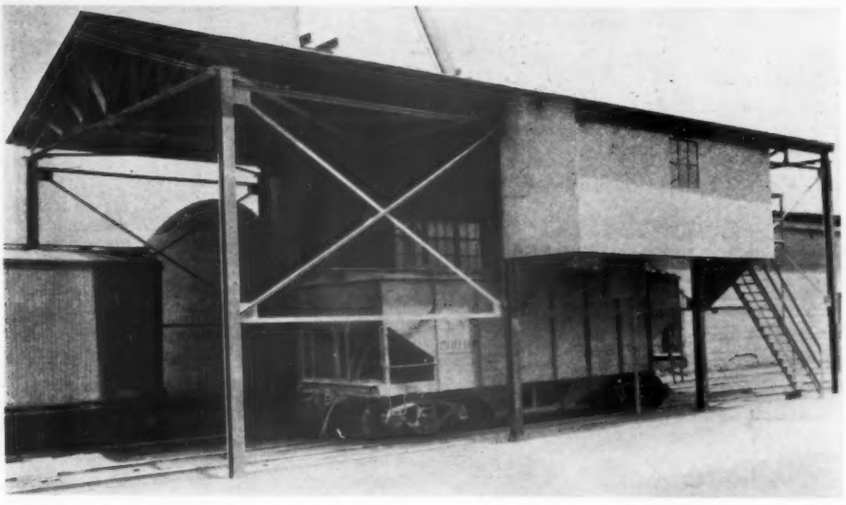
The new vertical-kiln lime plant of the Marble Cliff Quarries Company at Lewisburg, Ohio, is expected to be in operation soon, according to Russell Rarey, vice-president. Two 65-ton center burner kilns have been erected and gas for these kilns will be supplied by a Woods gas producer. Quick and hydrated lime and pulverized limestone will be produced, chiefly for chemical use. Stone will be obtained by surface quarrying but later a mine will be developed.

The mid-summer meeting of the Board of Directors of the National Crushed Stone Association will take place on Thursday, July 11 at The Homestead—Hot Springs, Virginia.

EMPLOYMENT AND PAY-ROLLS

(Compiled for PIT AND QUARRY by Isador Lubin, Commissioner of Labor Statistics, U. S. Dept. of Labor.)

Industry	Establishments	Number of Employees	Pay Rolls (1 week)
Cement:			
March, 1940	135	17,881	$461,481
April, 1940	135	20,362	543,303
Percentage change		+13.9	+17.7
Quarrying and non-metallic mining:			
March, 1940	1,086	32,539	675,038
April, 1940	1,086	35,297	752,770
Percentage change		+ 8.5	+11.5



The new bulk-car-loading arrangement installed by the Coplay Cement Mfg. Company, Coplay, Pennsylvania. The scale house is at upper right.

Physical-Examination Question Is Studied

At the 1940 conventions in St. Louis, considerable interest was manifested in the question of pre-employment and periodic physical examinations of employees. It was then recognized that the problem was an extremely delicate one and that employers should not ignore its importance to a sound employment relationship and to economical management. The subject has been getting a much wider recognition, and at the recent National Conference on Labor Legislation, the Secretary of Labor was requested to appoint a committee to study the merits of pre-employment physical examinations, that committee to consist of representatives of management, labor and the public.

V. P. Ahearn, executive secretary of the National Sand & Gravel Association was appointed a member of the committee.

Enter Decree Against Long Island Concerns

A decree enjoining the Long Island Sand and Gravel Producers Association and eight of its member corporations from monopolistic practices in the future has been entered in Federal court at New York City with the consent of the defendants. Judge John W. Clancy signed the decree, which was obtained as the result of an investigation by attorneys of the Federal Department of Justice.

Ship Large Quantities of Lime Under A.A.A.

Farmers already have obtained 2½ times as much lime under the 1940 grant-of-aid program as they requested during the entire 1939 season, the Agricultural Adjustment Administration has reported. The present program still has several months to run in most states.

For the first five months of this year, the A.A.A. distributed 1,677,609 tons of liming materials, as compared with 660,610 tons during 1939.

Both lime and superphosphate are furnished to farmers participating in the Agricultural Conservation Program, in lieu of cash conservation payments. The materials are used in carrying out approved soil-building practices.

Allow Truck Drivers 60-Hour Work Week

Of particular interest to all producers who operate their own trucks in interstate commerce is the recent decision of the Interstate Commerce Commission in Ex Parte MC-3 in which the Commission assumes jurisdiction over the drivers of private carriers, thereby making applicable to such drivers the exemption in Section 13 (b) (1) of the Fair Labor Standards Act.

Prior to this ruling of the I. C. C. the Wage and Hour Division has held that the drivers of private trucks engaged in interstate commerce were subject to the hours limitation of 42 hours per week with time and one-half for overtime but with no daily limitation. Under this decision, effective August 1, 1940, drivers of private carriers will be limited to 10 hours daily duty in 24 and 60 hours for a week of 168 consecutive hours.

The Tews Lime & Cement Company, Milwaukee, recently erected a new sand hopper at its yard at a cost of about $1,500.

Facilities Installed by Coplay to Load Bulk Cement in Cars

The Coplay Cement Manufacturing Company has added some more interesting improvements to the series which have kept its plant at Coplay, Pennsylvania up-to-date.

Most important of the recent changes is the replacement of the old coal-grinding and drying department by direct-firing mills. A No. 40 Whiting coal mill has been installed on one of the four kilns and the others are to be installed later. A smaller mill will fire the four rotary driers.

The coal trestle is being extended so that coal can be discharged from cars into a 200-ton concrete hopper and a 2500-ton stockpile. Screw conveyors will reclaim from the pile to the hopper. A Merrick Feed-O-Meter scale, equipped with a Dings magnetic-separating pulley, will feed coal from the hopper to a Jeffrey hammer-mill. A Fuller Airveyor system will convey the ¾-inch minus coal to the feed bins over the kilns and driers. High- and low-level indicators on all of these bins will automatically control this system and a totalizing meter on the automatic scale will record total coal consumption. The old obsolete buildings, conveyor structures, etc., will be torn down.

Earlier a system had been installed for loading bulk cement into cars on a separate track without inteference to other loading operations. The empty car is spotted on the platform of a new Fairbanks 300,000-pound track scale. Cement is discharged into the car through a spout from a screw conveyor over the cement-storage silos. Switches in the scale house start up the cement screw and make it possible to stop the feed at the exact weight desired. With this system a 400-barrel car can be loaded with any desired type of cement from any silo or stockhouse in 50 minutes.

Banks Sell Buffalo Gravel Corporation

The Buffalo Gravel Corporation has been sold by the Marine Trust Company and the Liberty Bank of Buffalo to new interests. The banks each had a 50 per cent. interest in the company.

Purchasers are Myron L. Hyman of Buffalo and the Fuller interests of Scranton, Pennsylvania, who are identified with the International Salt Company. At one time these same interests were active in the ownership and control of the gravel company and Mr. Hyman's father, the late David Hyman, was president of the firm.

Lime Sales Reach Highest Level in Last Ten Years

Increased demand in most consuming industries raised the total sales of lime (quick and hydrated) in 1939 to 4,254,-3248 short tons, which was 27 per cent. above 1938 and the highest since 1929. Of this total reported by producers to the Bureau of Mines, sales of quicklime, 2,936,295 short tons, were 35 per cent. higher than in 1938, representing a larger proportional gain than the 13 per cent. increase recorded for hydrated-lime sales. Prices in 1939, as measured by the average values at the producing plants, generally were lower than in 1938.

Consumption of agricultural lime declined slightly from that of 1938 despite the reduction in price and the 5 per cent. increase reported for total cash farm income. Sales of hydrated lime for this purpose, approximately 60 per cent. of the total, fell below those of 1938, while the quantity of agricultural quicklime consumed increased nearly one-fifth. Building-lime sales during 1939 exceeded those of any year since 1930 and surpassed 1938 by 17 per cent., a gain that correlates fairly well with the increased activity reported for construction work. Consumption of hydrated lime comprised more than two-thirds of the total for this purpose in 1939.

Total sales of lime for chemical and industrial uses were considerably above those of 1938 and set an all-time record volume, exceeding the previous high of 1937 by 68,510 short tons. This record was due chiefly to increased consumption of lime in metallurgical (including flotation) and water-purification processes. The tonnage of metallurgical lime sold in 1939 was 52 per cent. above that of 1938, due largely to the exceptionally high rate of operations in the steel industry during the latter part of the year. The average price per ton declined 45 cents compared with 1938. Lime sold for water purification was 35 per cent. above 1938 and 18 per cent. greater than in 1937. Chemical-lime sales to most other consuming industries increased over 1938 and compared favorably with similar figures for 1937. Hydrated lime comprised 19 per cent. of the total quantity of lime sold for chemical and industrial uses in 1938.

Lower prices for refractory lime (dead-burned dolomite) and the heavy demand following the rapid expansion in steel production after July, pushed sales of this material in 1939 to a new high annual volume, surpassing those of 1938 by 83 per cent. and 1937, the former high record, by 9 per cent.

RECENT GOVERNMENT CONTRACTS FOR MATERIALS UNDER THE PUBLIC CONTRACTS (WALSH-HEALEY) ACT

Date of Delivery 1940	Supplier	Government Agency	Commodity	Amount
12/31	Emil Meyer, Rosebud, Mo.	Agriculture	Ground limestone	Indefinite
12/31	A. W. Gallagher & Son, Madison, Wisc.	Agriculture	Ground limestone	Indefinite
12/31	George Millerd, New London, Wisc.	Agriculture	Ground limestone	Indefinite
12/31	Landwehr & Hackl, Seymour, Wisc.	Agriculture	Ground limestone	Indefinite
12/31	Mississippi Lime Co., Alton, Ill.	Agriculture	High-calcium stone	Indefinite
	Mississippi Lime Co., Mosher, Mo.			
12/31	Riverview Stone & Material Co., Baden Station, Mo.	Agriculture	Ground limestone	Indefinite
12/31	M. J. Zimmerman, Shawano, Wisc.	Agriculture	Pulverized limestone	Indefinite
12/31	Wilson Rock & Limestone Co., Wilson, Wisc.	Agriculture	Agricultural lime	Indefinite
12/31	Lewis G. Allen, Golconda, Ill.	Agriculture	Ground limestone	Indefinite
12/31	Erwin Lanning, Marion, Iowa	Agriculture	Agricul. limestone	Indefinite
9/20	Colonial Sand & Stone Co., Inc., New York City	W. P. A.	Limestone screenings	$10.756.46
9/20	Halton Amiesite Co., Inc., Mt. Vernon, N. Y.	W. P. A.	Asphaltic concrete	32,195.94
7/1	Wm. P. McDonald Construction Co., Flushing, N. Y.	W. P. A.	Bituminous concrete	15,375.00
Indef.	Killbuck Sand & Gravel Co., Killbuck, Ohio.	W. P. A.	Gravel	11,849.05
5/8/41	Sherman Concrete Pipe Co., Knoxville, Tenn.	T. V. A.	Concrete pipe	10,000.00
Indef.	Wabash Portland Cement Co., Osborn, Ohio.	W. P. A.	Portland cement	44,431.35
1/20/41	Riverside Cement Co., Los Angeles, Calif.	War Engineer Corps	Portland cement	71,370.00
6/30/41	Basalt Rock Co., Inc., Napa, Calif.	Navy Purch. Office	Transit-mixed concrete	63,365.00
Indef.	Carnegie Illinois Steel Corp., Youngstown, O.	W. P. A.	Slag screenings	15,600.00
Indef.	The Standard Slag Co., Youngstown, Ohio	W. P. A.	Slag screenings	16,974.41
Indef.	Medusa Portland Cement Co., Cleveland, Ohio	W. P. A.	Portland cement	14,162.33
Indef.	Pittsburgh Plate Glass Co., East Fultonham, O.	W. P. A.	Portland cement	13,672.22
Indef.	The Standard Slag Co., Youngstown, Ohio.	W. P. A.	Asphaltic concrete	62,505.00
Indef.	Carnegie Illinois Steel Corp., Youngstown, Ohio	W. P. A.	Slag	18,360.00
Indef.	J. & L. Snouffer, Inc., Dublin, Ohio.	W. P. A.	Crushed limestone and sand	14,346.20
Indef.	The Whittemore Co., Roslindale, Mass.	W. P. A.	Ready-mixed concrete	10,880.00
Indef.	Old Colony Crushed Stone Co., Quincy, Mass.	W. P. A.	Binder course	123,400.00
Indef.	Warren Bros. Roads Co., Cambridge, Mass.	W. P. A.	Binder course	32,950.00
Indef.	Southern Phosphate Corp., Baltimore, Md.	T. V. A.	Phosphate sand	80,000.00
Indef.	Wabash Portland Cement Co., Osborn, Ohio.	W. P. A.	Portland cement	15,992.04
Indef.	Wabash Portland Cement Co., Osborn, Ohio.	W. P. A.	Portland cement	17,719.80
Indef.	Huron Portland Cement Co., Cleveland, Ohio.	W. P. A.	Portland cement	Indefinite
Indef.	Ohio Gravel Co., Cincinnati, O.	W. P. A.	Sand, gravel	22,394.27
	American Materials Corp., Hamilton, O.			

[1]"Indefinite" refers to indefinite contract; purchases to be made as and when needed.

Blasting Machine Used to Signal Operators

The Landon Stone Company, Germantown, Wisconsin, located remote from electric high lines, was faced with the problem of installing and maintaining a signal system on its belt-conveyor system.

Originally a long cord, extending the full length of the 300-foot conveyor, was used to transmit code signals to a clapper at the crusher and sorting bins. Much trouble, however, was experienced in eliminating friction. A subsequent installation of a small cable for the rope still proved ineffective.

The installation of a two-telephone system, each phone containing a magneto for ringing purposes, was next tried, and found to be a great improvement over the one-way clapper system. To save time and steps, the employees arranged a code of signals with the telephone bells which eliminated the conversation, as well as speeded up operations.

This fairly efficient arrangement gave birth to a new idea. Since the magneto and telephone-bell arrangement served well without even replacement of batteries, why not install a more extensive magneto system? A hand-operated blasting magneto, with a capacity for ten electric caps was experimented with and proved successful. Subsequently four such magnetos were installed in sheet-metal boxes at points along the belt-line, where Barber-Green conveyors discharged on the main belt.

A conduit run of inexpensive ½-inch steel tubing contains the four wires required for both the telephone and the signal service. The operating keys or handles of the blasting machines are removed during shut-down periods to prevent loss by vandalism. Once properly installed with good workmanship and materials, this system will render many years of trouble-free service.

Hold Hearings on New Dust-Control Code

Public hearings were held by the New York State Department of Labor at Buffalo, Rochester, Syracuse, Albany and New York City during June regarding the state's proposed new code rule No. 34 relating to the control of silica dust in the crushed-stone industry.

Printed copies of the proposed code are in the hands of the various interested concerns and individuals also and comments and criticisms will be received by the Department's Board of Standards and Appeals at Albany up to August 1.

According to the Board, 115 plants employing about 2,400 individuals will be affected.

The Boswell Sand Company of Boswell, Pennsylvania, is opening a concrete-block plant. An Anchor stripper has been purchased.

Pennsylvania-Dixie Improves Plant No. 4 Near Nazareth

The Pennsylvania-Dixie Cement Corporation now has near completion an extensive improvement program at its No. 4 plant near Nazareth, Pennsylvania, which will for all practical purposes make this a new plant. This is the old Dexter plant which had never been shut down except for the annual checkover.

The work is being done with the least possible interference with production. Four of the eight old 6- and 7- by 100-foot kilns were first removed to make room for two of the three new 10- by 135-foot Vulcan kilns which started operation about July 1. When these are in operation the remaining four old kilns will be shut down and removed and the third new kiln, which is on hand, will be installed. Space will be left for a fourth kiln. All new equipment is expected to be in operation by October.

In the raw end of the plant three 25- by 75-foot concrete blending silos are being installed with a Fuller-Kinyon system for feed and recirculation. Screw conveyors and elevators will be used for reclamation. Two Sturtevant 16-foot separators are being installed in closed circuit with the three raw tube-mills. Two Hercules mills have been retained for preliminary raw grinding.

The old coal-grinding and drying department has been eliminated and Kennedy-Van Saun direct-firing and drying ball-mills are being installed on each kiln. The old coolers have been replaced by Fuller 5- by 21-foot step-grate coolers. In this department also the four waste-heat boilers which were formerly connected to the eight old kilns by a common flue are being connected to individual kilns. The old open clinker storage has been replaced by large concrete silos which will prevent deterioration of the clinker and will eliminate dust.

No major changes have been made in the quarry which also supplies plants 5 and 6 by cableways. A new 60-foot level is being opened up and when this is completed the Allis-Chalmers roll primary crusher will be moved into the quarry. The Pennsylvania hammer-mill secondary crusher was installed several years ago. The old gasoline locomotive and car haulage system in the quarry has been replaced by Mack end-dump trucks. Later side-dump truck-trailers are to be installed.

Improvements to Pennsylvania-Dixie Plant No. 8 at Des Moines were recently completed. Two Fuller inclined-grate clinker coolers were installed and Norblo dust collectors were put in the raw- and finish-grinding departments.

Carney Co. Acquires Group Life Insurance

The Carney Company, manufacturers of masonry cement and rock wool with headquarters at West Mankato, Minnesota, has acquired a group life insurance policy involving a total of $64,500, for the protection of 79 employees.

The Prudential Insurance Company of America issued the policy on the contributory basis.

Construction view showing new Grandview plant No. 26 of the American Aggregates Corporation, near Columbus, Ohio.

Report 20 Per Cent. Gain in Business by Kelley Island

Business of the Kelley Island Lime & Transport Company during the first quarter of 1940 improved over that for the same period in 1939, sales increasing 20 per cent. and should show continued gains during the second quarter, George J. Whelan, president, stated in his annual report to stockholders.

Net profit for 1939 totaled $338,028, equal to $1.09 per share, on 308,052 shares outstanding, compared with the 1938 total of $239,804, or 78 cents per share.

Sinking of the company's largest vessel at the peak of the period of demand for flux stone and sand affected the company's profits, Mr. Whelan said.

A 50-year lease of stone lands entered into in 1917 with the Martinsburg Limestone Company, Martinsburg, West Virginia, was disposed of during the year to the Standard Lime & Stone Company.

Gravel Dredge Raised After Sinking at Dock

The stern end of the 246-foot sand dredge *Lakewood,* owned by the Buffalo Gravel Corporation, was raised several hours after it sank at the company's dock in the Niagara River recently.

The ship apparently sprung a leak which permitted water to seep in and fill the after end. The stern of the *Lakewood* rested on the river bottom but the deck was above water and the bow protruded into the air at an estimated 30-degree angle. The boat's stern went down in about 15 feet of water at the dock where she regularly unloads.

Water in the engine room rose half way up the engines. With a derrick, a dry dock crew lifted the vessel's after end. The dredge is 38 feet wide and has a carrying capacity of 2400 tons.

Simplifies Method of Applying Slate Roofs

A new simplified method of applying slate on roofs has been designed by Parsons Brothers Slate Company, Pen Argyl, Pennsylvania. Only half as much slate is required for a given area as when placed in the orthodox manner and small sizes are utilized. The small slates are placed without side lap but with a 3-inch head lap over strips of heavy asphalt-coated and impregnated felt which also have a 3-inch head lap. Other advantages are the low cost and reduced weight.

May Appeal Court Decision Granting Watchman Back Pay

Since the giving of a decision in favor of the plaintiff in W. W. Wood *v.* Central Sand & Gravel Company and Fischer Lime & Cement Company in the District Court of the United States for the Western District of Tennessee (reported *P&Q*, June 1940, page 22) some doubts have arisen as to the correctness of several points emphasized in it.

For one thing, it is thought to be immaterial that the Central Company is a subsidiary of the Fischer Company, because the right of the employee to the rates fixed by the Fair Labor Standards Act (Federal wage-and-hour law) are determined by the nature of his work, as has been repeatedly explained by statements made by the Wage and Hour Division.

It has been said, too, that according to Interpretive Bulletin 5 of the division, the law makes no distinction based on the percentage of the employer's goods moving in interstate commerce and that there is no justification for determining the applicability of the law to an individual employee on the basis of the percentage of goods which he produces, or of his employer's goods, which moves in interstate commerce. The Wood decision seems to treat this question of percentages as an important consideration, as it construes as "plainly substantial" the "15 to 20 per cent. of its total sales" which were interstate commerce. The court took the percentage of sales made by the parent (Fischer) Company rather than that of those made by the subsidiary (Central) as the criterion by which to judge the interstate nature of the employer's business.

Also, there has been some question why, inasmuch as there appears to be no retail question involved in the case, the court should have determined the plaintiff's status under Section 13 (a) (2) of the act. The Wage and Hour Division, in an opinion dealing with the question of what determines whether a business is retail or wholesale, has cited this Wood decision, which said in part: "Conceding that the defendant . . . makes many retail sales; yet, if it also does a substantial wholesale business, its business taken as a whole should not be considered a 'retail establishment' within the meaning of the exemption provided in Section 13 (a) (2). . . ." It has been contended that the sole question before the court was whether Wood, as a night watchman, was engaged in interstate commerce during those work-weeks in which the Central company, during a 55-week period, shipped 6 per cent. of its total sales to interstate destinations.

The defendant, it is understood, will appeal.

The new crushed stone plant of the Ohio Marble Company, Piqua, Ohio. Truck is discharging stone to primary crusher in foreground.

Minimum-Wage Question Soon to Be Decided

A public hearing attended by executives and directors of the aggregates associations was held at Washington, D. C., on May 24 before the Public Contracts Board of the Department of Labor on the subject of prevailing minimum wages in the sand, gravel, crushed-stone and slag industries under the Walsh-Healey Act.

Further hearings will probably be held shortly since the Board is apparently planning an early disposition of the minimum-wage question.

Equipment Distributors Convene in Chicago

Members of the Associated Equipment Distributors, manufacturers, and other interested persons attended the semi-annual meeting of the organization held June 17, 18 and 19 at the Edgewater Beach Hotel in Chicago.

Speakers included Fred Copeland, president of the Sullivan Machinery Company; Stanley H. Hunter of the American Hoist & Derrick Company; D. D. Guilfoil of Sauerman Brothers, Inc.; and Prof. Ralph Fuchs of Washington University, St. Louis.

Loss which may exceed $50,000 was caused by fire a few weeks ago at the plant of the Nickel Plate Sand & Gravel Company near Erie, Pennsylvania.

Ohio Marble Company Opens Crushing Plant

The Ohio Marble Company, Piqua, Ohio, has just put into operation a new 250-ton-per-hour plant for the production of crushed stone, blast furnace and foundry flux, etc. The 30-inch Allis-Chalmers McCully primary crusher and pan conveyor were retained from the old plant. New equipment includes a Jeffrey-Traylor vibrating feeder, Jeffrey belt-conveyors and elevators, a 3-foot Traylor TY crusher, and four Simplicity screens. Several screens from the old plant are also being used.

In the quarry the Marion 480 electric shovel loads to three General Motors and a White truck, each equipped with new Galion All-Steel Body Company 6-cubic yard steel end-dump bodies.

American Rock Wool Buys Plant at La Gro

The American Rock Wool Company of Wabash, Indiana, has leased the plant of Superior Insulations, Inc., at La Gro, Indiana, according to James R. Addington, president.

A complete line of mineral-wool products will be manufactured. Robert DeArmond will be in charge of operations at La Gro.

$60,000,000 Road Plan Announced for Quebec

A three-year program of main highway construction entailing a cost of $60,000,000 and the building of over 1,000 miles of four, three and two-lane super highways has been announced by the Quebec Department of Roads.

CURRENT BUSINESS INDICATORS

The collapse of the French defense that may well mean the end of the French Empire was received somewhat calmly by business leaders in the United States despite the calamitous and as yet unknown repercussions that are bound to ensue. For several weeks each reverse met by the Allies has been the signal for almost panicky reaction in security markets but, with the issue of an Allied defeat squarely to face, Wall Street and American industry have turned primary attention and pent-up energy to rapid development of the President's $5.000,000,000 defense program. The National Defense Advisory Commission, relying largely on the cooperation of experienced personnel in existing agencies, is moving swiftly. Placement of the largest naval construction order in history—22 vessels to cost $327,000,000—within a few hours after the approval of the appropriation is unprecedented. Purchases of airplanes, munitions, and supplies are expected to follow almost as rapidly.

The status of Allied orders earmarked for France is most uncertain but news from London states that the British Government is prepared to release at once funds originally expected to be held for purchases months, or even years, from now. Since last fall orders for 8,000 planes have been placed by the Allied purchasing mission and delivery has been made on less than half.

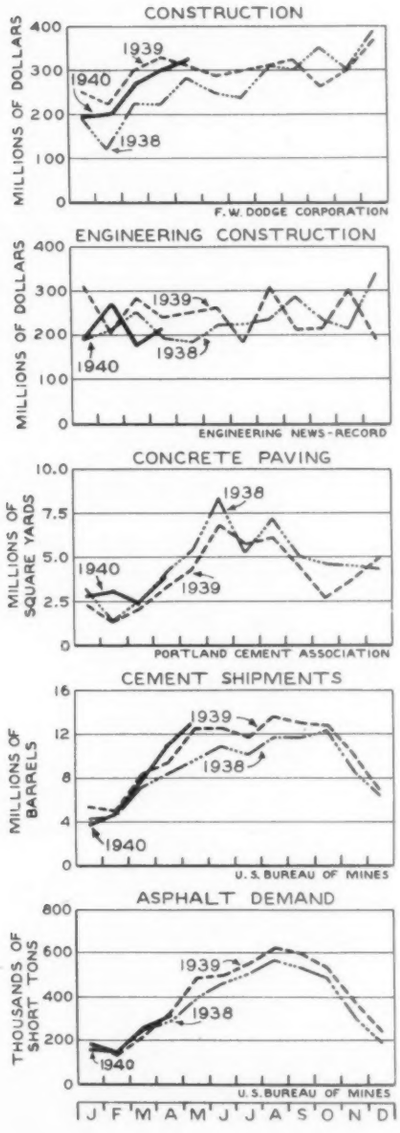
This backlog along with additional orders for aircraft and supplies from abroad and the huge defense program at home already have resulted in halting the downward trend of business activity following the December peak. The Federal Reserve Board's seasonally-adjusted index advanced from 102 in April to 105 in May. Steel production, which in April had been about 60 per cent. of capacity, rose to 71 per cent. in May and continued upward to 88 per cent. in the third week in June. Observers confidently predict that the industry will continue around 90 per cent. generally considered the practical limit for long-time efficient operation, throughout the rest of the year.

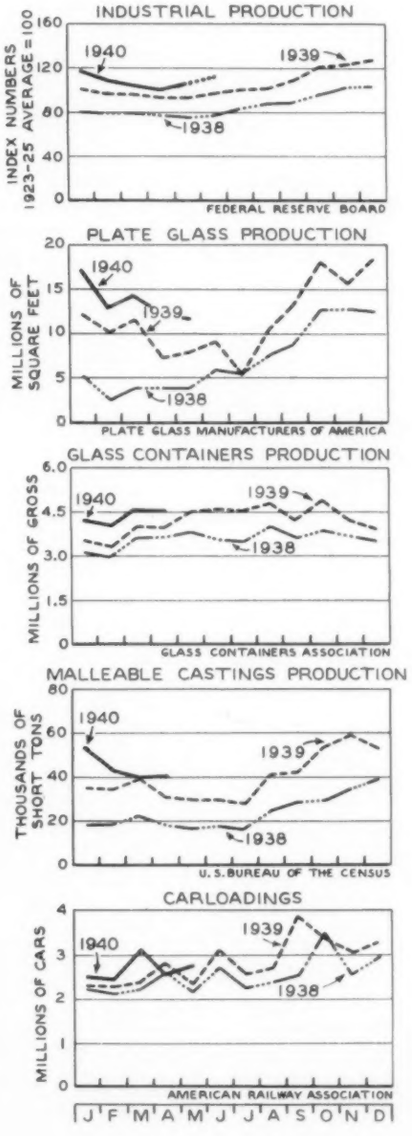
Increased industrial activity was not due to steel alone. Lumber production was up. The automobile industry slumped somewhat but is expected to close the model year with greater than seasonal activity. Woolen mills were swamped with orders for blankets and other materials, but there was little change in the rate of output of cotton textiles. Rayon production was large but mill takings of raw silk dropped to the lowest level in nearly 20 years.

The ultimate benefits of the defense program to the cement, stone, sand and gravel, lime, and other building materials industries are still not readily apparent. There will undoubtedly be a spurt in factory and other commercial building which even now is considerably larger than a year ago. The confidence of the American people in maintaining their rights and liberties regardless of cataclysms abroad is reflected in home building. Private residential contracts in May rose to the highest level in 10 years. The total value of construction contracts awarded in May, according to the F. W. Dodge Corporation, was $328,914,000, an increase of 9 per cent. from April and 7 per cent. over May 1939. This advance was due almost entirely to private building.

Following the sharp upturn last September the general trend of commodity prices has been definitely downward, with a pronounced dip around the middle of May. Since then, however, prices of industrial materials, particularly steel scrap, zinc, tin, cotton, and wool have stiffened; in some instances they have risen above the levels of early May.

Prices of government securities held relatively steady during the latter part of May and the first part of June, after a reaction at the time of invasion of Belgium and Holland. Subsequently prices increased sharply, and on June 15 the yield on the 1960-65 bonds was 2.40 per cent. compared with 2.52 per cent. on June 10 and 2.26 per cent. at this year's peak in prices on April 2. Certainly this stability is reassuring.





EDITORIAL

Convention Speakers

FOR more than a quarter of a century it has been both our privilege and our duty to attend various types of meetings of business men. In that time we must have been present at not fewer than three hundred assemblies—conventions, business lunches and dinners, committee and board meetings and the like—and we must have listened to not fewer than fifteen hundred speakers and to at least twice as many inquiring members of their audiences. Our position as members of various industries, professional groups and trade associations or as invited guests has enabled us to observe the reasons why some people attend and the reasons why the great majority of those who might be expected to be interested seldom or never go.

We believe thoroughly in the democratic principle that the soundest conclusions are arrived at and the best policies decided upon by frank and unrestrained discussion; that most intelligent men are competent to form intelligent opinions if they have access to all, or most of, the facts; and that no one who holds such an opinion should be denied the privilege of expressing it. We believe it is impossible to evoke in men the same spirit of active support for a "cause" by domination as can be aroused by the spreading of conviction; we favor persuasion rather than compulsion, reason above force. We know of no more effectual machinery for the solving of great problems than the democratic type of discussion in which, on the basis of known facts, various procedures can be examined, different points of view considered, antagonistic interests resolved.

The underlying essential, if success is to crown this democratic method, is factual information, knowledge of conditions, awareness of potentialities. Obviously men can not form any but erroneous opinions, if their deductions are based on false or distorted information, if they are denied access to those facts which alone can form the starting point for the formation of sound views.

To business men of all kinds is entrusted our economic and much of our political future. On them rests the responsibility for making decisions that can not fail, whether they be sound or erroneous, to have far-reaching effects on our way of life as a nation and on our intellectual and material development as individuals. It is a matter of importance, it seems to us, that business men should be able to acquire the knowledge which they require for the discharge of that responsibility, that they should be kept as free as possible from the destructive and deceptive effects of propaganda. This need is greater than may commonly be imagined, because the average business man—despite his success in acquiring, organizing and operating the means of production, despite his skill in discovering, improving and distributing the means to a higher standard of living, in spite of his truly amazing versatility and acuteness, and in spite, too, of his great dependence on facts in the carrying out of these functions—is himself as great a victim of propaganda as his less well-informed neighbor in other walks of life. The speaker's platform at the usual meeting of business men is as convenient and useful a tool for the spreading of erroneous ideas as the daily newspaper, the weekly magazine, or the anonymous handbill. That it is being consistently and effectually used for that purpose by those with wares, ideas and services to sell is evident in the majority of the meetings which we have attended.

In the field of economics, whereof the average business man knows but a little more than nothing, pleaders for special privileges for their employers, advocates of special forms of legislation for themselves and fellow industrialists, opponents of social-betterment plans, and countless others representing individual and group interests with "axes to grind" impose their points of view on their business-men audiences with no more difficulty than the proponent of a new economic system shapes the opinions of his underprivileged hearers. In the field of sociology, closely related to economics and for that reason as little understood by most business men, the opponents of social legislation blind their listeners to the truth about conditions well known to others, deliberately ignore, or are afraid to discuss, what business men should know about the inevitable future results of present-day indifference to grave social problems, or speak in glowing terms of the saving influence of a benign destiny that, in some mysterious way, will make everything "come out all right in the end." In the field of business itself, men who live out of the perpetuation of industrial-relations problems, for example, talk with a great pretense of candor about conditions that worry many business men, conditions which can be improved if at all, they say, only by the employment of specialists, like themselves, in the capacity of counselors in problems of labor and industrial management. The rounds of applause that invariably follow the delivery of speeches of this kind and the informal comment one hears are the best evidence of the extent to which those who listen to them are "taken in."

All is not darkness and ignorance, of course. There are definite signs that business men are demanding better speakers, men who are not afraid to tell the truth however much it may disturb the prejudices of their audiences, men who will not resort to falsehood, deception and the withholding of important truths for the honor or other compensation which their invitation to appear in public may bring them. Men are grown tired of the speaker who is determined to inject his own views, to propound his own theories, to press his own selfish interest; they are disgusted with speeches which present nothing new, which provide no facts of value, which, music-box like, repeat the old, time-worn tunes. By their absence they indicate in unmistakable terms their lack of interest in what most business-meeting speakers have to say.

One of the remedies, in our opinion, lies in the open-forum type of discussion in which no one seeks to force his own point of view, but where everyone present may share in the discussion, bringing forth such facts and opinions as he feels may contribute to the forming of sound conclusions. A wider adoption of this procedure may, if not too long deferred, revive in business men the belief that they will really be benefited by the time and expense which attendance at distant meetings entails.

Industrial-Sand Producers Gather to Study Problems Confronting Industry

WITH nearly forty producers of industrial sand registered as in attendance, the fifth annual convention of the National Industrial Sand Association opened for a two-day meeting at the Greenbrier Hotel, White Sulphur Springs, West Virginia, on June 13. Preëmployment physical examinations, the legislative situation with respect to occupational diseases encountered in the production or use of silica sands, and tests of foundry sands occupied the attention of those present.

Retiring President Russell G. Hay, in speaking briefly of the work accomplished during his two years' incumbency of that office, mentioned the association's research in foundry sands, the formulation of the New York foundry code (in which Executive Secretary Ahearn played an important part as a committee member), and action in preventing freight-rate increases as accomplishments of value to the entire industry.

Stanton Walker, consulting engineer of the association, presented a progress report on the *Reproducibility of Tests of Foundry Sands*. The methods by which selected samples of foundry sands of two kinds—bonded and unbonded—were subjected to testing by different laboratories were described and the results were given in tables and stereopticon curves. Some of the laboratories are operated by industrial-sand producers, others by independent agencies. The wide variation in the results obtained with identical samples of unbonded sands indicated the impracticability of specifying tolerances in terms of percentages of range. The effects of the time of sieving and the weight of the sample were also studied.

The bonded sands were tested for permeability, strength, moisture, etc. A wide range was shown by the results obtained by the testing of four samples by about twenty laboratories, the factor of permeability showing the widest range. It was decided that the results obtained indicated the advisability of continuing the work in progress with the view of ultimately publishing the results.

V. P. Ahearn, the association's executive secretary, discussed proposed legislation being considered by the Congress. He mentioned among those bills particularly deserving of interest the La Follette Civil Liberties bill which forbids oppressive labor practices on the part of employers and makes the offender punishable by a fine of $10,000 and imprisonment for 6 months. Among the practices enumerated are the employment of labor spies, the employment of strikebreakers, and the possession of industrial munitions. A strikebreaker is defined as one who replaces a striker at wages higher than those paid the striker. Industrial munitions include tear gas, automatic guns, etc.

The National Labor Relations Act, he said, may be amended so as to abolish the present board in favor of a 3-man board and to require that certifications of specific labor unions remain in effect for at least one year. Mr. Ahearn thought it unlikely that the amendments proposed for the Fair Labor Standards Act (the Federal wage-and-hour law) would be adopted at this session of the Congress unless the session should be extended.

Although an application for exemption of the industrial-sand industry from the provisions of the Fair Labor Standards Act on account of its seasonal nature had been filed, Mr. Ahearn explained that the evidence obtained from members of the industry had not been sufficient to warrant further hearing by the Wage and Hour Division. He referred to the exemption granted by the division to the Northern Branch of the sand-and-gravel industry as that section within the 25-degree isotherm.

He said that the decision in the National Container case contained no condemnation of legitimate trade-association activities, and pointed out that, according to the decision in the Madison Oil case, any combination to raise or stabilize prices, however reasonable, is illegal.

The Apex decision, he explained, held that the Sherman Act (the anti-trust law) is not applicable to labor unions when the effects of their actions on interstate commerce are only incidental.

The right of the Federal government to establish wages under the Walsh-Healey Act has been established by the court's decision in the Lukens case. No one, apparently, can question the right of the government to attach to government purchase contracts any condition it deems wise. The bituminous-coal case has established the right of the government to fix prices in any industry, Mr. Ahearn added.

He also mentioned some of the problems confronting the country as the results of the national-defense program. Some experts believe that the country should have an army of at least 500,000 men and the equipment (including motorized and mechanized divisions) for that number. He referred to the adjustments that will undoubtedly be made in all industries because of the need for obtaining maximum production of certain types of equipment. The association will ask the Association of American Railroads to consult with the industrial-sand industry before imposing any car restrictions.

Thomas Matthews told the assembled producers of some of the difficulties encountered in trying to keep employment records in ways that will conform with the regulations set down by the government under the Fair Labor Standards Act, particularly in the cases of employers who pay their workers twice a month. The regulations require that the records kept by every employer show the number of hours worked in each week by each employee, the number of hours of overtime, the total wages paid, and the total amount of overtime compensation. Semi-monthly payment records, since they do not coincide with calendar weeks, do not provide the necessary information. He displayed a sheet which his company had had prepared to provide the kind of data required by the government. Several extra vertical columns give the necessary information, which is not available, without calculation, from the records commonly kept. After discussion it became apparent that the simplest solution of this problem lies in changing to bi-weekly payments, which would, of course, coincide with calendar weeks, and then carrying the remaining days at the close of each month as accrued pay-roll to provide monthly records for the employer's accounting purposes.

John C. Gall of the National Association of Manufacturers was scheduled to address the convention but he could not be present.

On the subject of preëmployment physical examinations Dr. Raymond Hussey of Baltimore read a paper of unusual interest. He indicated the importance of the mental side of the problem of examinations by pointing to the fact that a recent survey showed that 62 per cent. of 4,000 workers examined were found to be socially incompetent. The history of an individual—

particularly his industrial history—is very important, he believes.

For the testing of sight and hearing precise methods are available, he said; the sense of smell can be satisfactorily tested; the individual's posture and locomotion can be checked with the same care; patch tests, although dependable only when negative, are available for checking dermatoses (general skin diseases); the blood can be tested chemically for determining the presence of a lead hazard; the urine and feces can be analyzed; functional tests of the heart and lungs can be made. Tests of these sorts reveal that most men have some handicap, and, also, that deformities may sometimes be advantages in certain occupations.

Dr. Lanza, the speaker said, had classified industrial sicknesses in three groups: (1) occupational diseases—those that are due entirely to the nature of the work in which the employee is engaged; (2) general sicknesses, which have some relation to his work, such as muscle and eye strain; and (3) all the other ills that afflict mankind and are not connected in any way with the worker's occupation. The employer's responsibility is great in the first two classes but nonexistent in the third class.

He referred to the work of industry in reducing labor turn-over by means of preëmployment physical examinations and cited the case of a lead company which, in 25 years, had reduced its labor turnover from 250 per cent. annually to 3.6 per cent. He mentioned the opportunities provided by the membership of Mr. Ahearn on the Committee on Preëmployment Physical Examinations.

The relation of tuberculosis to industry is becoming more and more complicated, Dr. Hussey said, although the disease has been brought down from first to fifth place as a cause of death. It was greater among members of the medical and nursing professions than among the general population in the second decade of this century, but has been greatly reduced in prevalence by preëntrance examinations introduced in medical schools in the last five years. Tuberculin skin tests and X-rays of the lungs are employed to reveal the presence of the disease. Dr. Hussey cited the case of a medical student whose tests made annually for six years revealed nothing yet who, in the seventh year, developed a case of tuberculosis that proved fatal.

Diseases are taken into the body through breathing (the respiratory tract), through eating (the alimentary tract), and through the skin. Through the first method lead poisoning and silicosis can be acquired; lead is also taken into the body through food.

The lead which the system acquires is converted into lead phosphate, and what is not eliminated by the kidneys is absorbed and stored in the bones, its presence being shown by chemical analysis of the blood. Vitamin D, calcium and phosphorus in the diet help in the absorption of lead. Under certain conditions, such as vitamin deficiency, the calcium stored in the bones is poured back into the blood stream and carries the lead with it. Lead poisoning results.

Every normal person has some lead in his system and when the content does not exceed 5.08 milligrams per cubic centimeter of blood there is no potential lead-poisoning hazard. Persons with contents of 5.09 or greater should not be employed in lead-hazardous occupations. A physician of the Inland Steel Company has shown by tests extending over a year and a half that the presence of 3 milligrams of lead per 10 cubic feet of air is not dangerous to workmen who breathe it.

The mere presence of free silica in the air breathed by workers is not sufficient to cause silicosis and is not a health hazard. If the particles are larger than 10 microns, they cause little harm, according to Dr. Hussey. He said that Dr. Gardner of Saranac had shown that there was no silicosis in the cement industry because of the large size of the particles present in the dust. The concentration per cubic foot of air inhaled is very important. There are modifying factors, such as metallic aluminum, which modify or counteract the effects of free silica and can be used as preventives. The worker, in such cases, is first exposed to the dust of metallic aluminum before entering the silica-laden air in which he is to work.

The average individual has a silica content of 0.113 per cent. The silica particles which are inhaled are not absorbed by the blood but cause pulmonary fibrosis, resulting from the reaction of the lung tissue to the small particles. Dr. Hussey said that silicosis is not a killing, or even a disabling, disease. It is, however, progressive, and the complications which develop in connection with it are usually fatal.

The association's attorney, Theodore C. Waters, discussed the legal aspects of physical examinations as a condition preceding employment. He said that engineering control of dust must be supplemented by medical control in order to protect the health of workers, so physicians are advocating not only preëmployment, but also periodic post-employment, physical examinations. The use of such examinations may avoid or limit the employer's potential legal liability.

In the absence of statutory prohibition an employer has the legal right to request an employee to subject himself to physical examination as a prerequisite to accepting him as an employee, but he does not have the right, except by statutory provision, to require that employee to subject himself to periodic post-employment examinations. Some states—Louisiana, Maine, New Jersey, New Mexico, New York and Pennsylvania—require the physical examination of employees. North Carolina requires preëmployment and periodic post-employment examinations of all employees exposed to the hazards of asbestos and silica dust. Missouri, New Jersey, Ohio and Pennsylvania require monthly examinations of employees exposed to the dangers of lead poisoning.

The speaker believes it probable that states having occupational-disease compensation statutes, with provisions for the promulgation of rules and regulations for the prevention and control of occupational diseases, will adopt regulations requiring physical examinations. The Wisconsin Industrial Commission, acting with the Industrial Hygiene Division of the Wisconsin State Board of Health, recommends physical examinations and has established a method of procedure. He advised his hearers to send for a copy of the regulations.

He then discussed the three industrial codes which the New York State Department of Labor has submitted for approval by the Board of Standards and Appeals under Section 29 of the New York Labor law: (1) a code for the control of dust, fumes and gases in foundries; (2) a code for the control of silica dust in the stone-crushing industry; and (3) a code for the control of silica dust in the stone-cutting and stone-finishing industry.

The first, the foundry code, establishes as injurious dust concentrations 25,000,000 particles per cubic foot of air for any foundry operation, except abrasive blast cleaning, in which the concentration must not exceed 10,000,000 particles. The stone-crushing code sets up as dangerous dust concentrations 100,000,000 particles per cubic foot of air for stone containing less than 10 per cent. of free silicon dioxide by weight and 10,000,000 particles for air containing more than that amount. The stone-cutting code sets up three dangerous concentrations: (a) 100,000,000 particles per cubic foot of air for stone containing less than 10 per cent. of free silicon dioxide; (b) 10,000,000 for stone containing between 10 and 70 per cent. of free silicon dioxide; and (c) anything in excess of 5,000,000 for stone containing more than 70 per cent. Mr. Waters criticized these codes principally because they set up different

(Continued on page 32)

Determination of Prevailing Minimum Wages Now Underway

UNDER the Walsh-Healey Public Contracts Act, passed as stop-gap legislation after the Supreme Court had sounded the death knell of the N.R.A., the Secretary of Labor is instructed to determine prevailing minimum wages in every industry that sells materials or equipment to agencies of the Federal Government. Although the Act became effective on September 28, 1936, and contracts since then have been subject to the 8-hour day and the 40-hour week and other provisions, the minimum wage requirements have been inoperative pending a determination by the Administrator. Procedure to determine this prevailing minimum wage for the crushed-stone, sand-and-gravel, and slag industries is now underway. While in a statutory sense, the minimum wages finally determined will apply only to contracts subject to the Walsh-Healey Act, the natural result will be to establish a precedent for minimum wages in every state. Furthermore, any company that should find it necessary to make an adjustment in wages to comply with the Act would undoubtedly discover that any subsequent lowering of wages would be virtually impossible. Of particular significance is the fact that the minimum wage finding is based on the practice of the whole industry and not just on those companies who have operated or intend to operate under the Act.

As a vital step in the procedure the three associations representing crushed-stone, sand-and-gravel, and slag producers undertook a canvass of their respective industries to develop data pertaining to hourly earnings of production workers and common laborers. In conference with the Administrator the following definition was agreed upon:

"These industries include the production and preparation for sale of crushed and broken stone (including rip-rap), sand, gravel, and slag. This definition shall be construed to include any stripping, quarrying, recovering, crushing, screening, washing, loading, handling, or other activities connected with the production and preparation for sale of the products of these industries."

In attempting to separate production workers from common laborers respondents were instructed to class as a common laborer "one who performs physical or manual labor of a general character and simple nature, requiring no special training, judgment, or skill." Further instruction was given to exclude office employees, watchmen, maintenance employees, foremen or supervisors when such employees are not engaged in production.

As a result of this canvass returns were received from 176 crushed stone plants employing 6,325 wage earners, 368 sand-and-gravel plants employing 5,263 wage earners, and 51 slag plants employing 803 wage earners. These data were collated by the research section of the Division of Public Contracts and introduced into the public hearing held in Washington May 24, 1940. A summary of the information is given in the accompanying table. Thomas Holland presided for the Administrator and conducted the meeting in a fair and able manner. In addition to the association officials the industries were represented among others by Messrs. Rigg, Graves, Tompkins, Bird, Foster, Mattison, Ireland, McDermott, and Snyder.

Except for introduction of various exhibits the hearing itself failed to develop information of particular consequence. Otho M. Graves, speaking for the crushed-stone industry, pointed out the artificiality of State boundaries in the practical solution of minimum wages determination. V. P. Ahearn explained to the chairman that the three industries had hoped to present a joint statement and had made preparations for such a report. At the last minute, however, it was found that there were honest differences of opinion that could not be reconciled in time for the hearing and a request for permission to file a supplementary brief was made. This permission was granted to each of the industries, but subsequent conferences have resulted in a renewal of efforts toward a joint presentation and it is expected that a joint brief will be submitted to the Administrator shortly before June 30, which was set as the final date on which such material would be acceptable. Actual determination of the prevailing wage is then expected to be made within a few weeks.

Meanwhile the Walsh-Healey Act has been criticized severely by Army and Navy officials who contend that its maximum-hour, overtime, and penalty provisions have interfered drastically with purchasing programs, not only slowing down defense preparations but also adding a greater cost to the Government. With speeding the defense program uppermost in most Congressional minds the Vinson bill, substituting negotiated contracts for competitive bidding and exempting naval orders from Walsh-Healey steel wage minimum, passed the House by the astonishing vote of 401 to 1. This action immediately brought charges by C. I. O. spokesman, John L. Lewis, that the President's pledge on labor standards was being violated. Despite such opposition by labor it is expected that the provisions of the Walsh-Healey Act may be liberalized to facilitate carrying out the national defense program.

HOURLY EARNINGS AND NUMBER OF WORKERS IN 595 PLANTS OF THE CRUSHED STONE, SAND AND GRAVEL, AND SLAG INDUSTRIES IN 1939

Hourly Earnings	Number of Employees	Hourly Earnings	Number of Employees	Hourly Earnings	Number of Employees
Under 25c	139	44-44.9	38	64 -64.9	14
25-25.9	781	45-45.9	900	65 -65.9	434
26-26.9	27	46-46.9	15	66 -66.9	56
27-27.9	83	47-47.9	135	67 -67.9	56
28-28.9	3	48-48.9	23	68 -68.9	89
29-29.9	1	49-49.9	58	69 -69.9	14
30-30.9	1,390	50-50.9	1,211	70.0-72.4	417
31-31.9	13	51-51.9	7	72.5-74.9	96
32-32.9	66	52-52.9	65	75.0-77.4	432
33-33.9	86	53-53.9	48	77.5-79.9	69
34-34.9	9	54-54.9	33	80.0-82.4	229
35-35.9	606	55-55.9	538	82.5-84.9	36
36-36.9	43	56-56.9	138	85.0-87.4	153
37-37.9	34	57-57.9	95	87.5-89.9	19
38-38.9	22	58-58.9	344	90.0-92.4	88
39-39.9	68	59-59.9	22	92.5-94.9	8
40-40.9	1,242	60-60.9	799	95.0-97.4	110
41-41.9	29	61-61.9	38	97.5-99.9	9
42-42.9	58	62-62.9	158	$1.00 and over	449
43-43.9	61	63-63.9	187		
					12,391

9 Indicted in Chicago Ready-Mix Dispute

Michael Carrozzo, czar of the street laborers in the Chicago area, nine other men, and two labor unions are charged with conspiracy to violate the Sherman Anti-Trust Act in an indictment returned by the federal grand jury before Federal Judge James H. Wilkerson.

Specifically, the indictment charges that those named conspired to prevent use of ready-mixed concrete in the Chicago area. The main charge is that the defendants combined and conspired to "prevent persons, partnerships and corporations engaged in the manufacture of truck mixers in states other than Illinois from selling and delivering the truck mixers to the Chicago area."

Leaders in Lime Industry Convene to Discuss Technique, Business, War

WITH a registered attendance of only 33 producers, representing 28 lime-manufacturing companies in the United States and Canada, the twenty-second annual convention of the National Lime Association was held in Chicago, May 21 and 22. Twenty-nine guests—speakers and machinery manufacturers' and publishers' representatives—plus seven association representatives brought the total registered attendance to only 69.

At the first day's industry lunch Clarence B. Randall, vice-president of the Inland Steel Company, Chicago, pleaded for the adoption by business men of a more enlightened—and, hence, a more liberal—attitude toward economic changes, as a means of preventing the failure of individual initiative and "free enterprise" in America.

William F. Dinnen, an attorney for the Federal Trade Commission, was the first speaker as the convention sessions opened on Tuesday afternoon, May 21. Mr. Dinnen discussed the workings of the commission, describing the detailed investigations involved in building up a case. He traced price-discrimination legislation through the Clayton and Robinson-Patman Acts and told of the painstaking efforts of the Commission in sifting evidence in connection with alleged law violations. He cited a number of the more important recent cases and explained the intent and purpose of cease-and-desist orders, stipulations, and other commission actions.

After his talk he informally answered questions propounded by a number of those attending regarding existing or hypothetical price situations.

The *rôle* of lime in the stabilization of clay-soil roadbeds was described in considerable detail by the next speaker, Sherman D. Le Sesne, a chemistry instructor at Oklahoma City University. Mr. Le Sesne has pioneered in this work in Oklahoma and Texas and his success has attracted the attention of the National Lime Association and the industry in general for the promise it holds forth as an outlet for a large future tonnage of lime.

Mr. Le Sesne pointed out that, of all the materials used in his extensive experiments to develop a stabilizing agent for the sticky, gumbo clays found in the Southwest, none were quite as good as was hydrated lime. Based upon the encouraging results in the laboratory, a number of actual road tests were made, including a highway strip 1,000 feet in length which, the speaker said, is showing unusually good results.

"The stabilization of clay roadbeds with lime has two main applications," said Mr. Le Sesne. "First, the soil subbase may be stabilized under the usual concrete or asphalt road that is being built. This insures a smooth road and prevents a loss of the investment of the road at a small fraction of its cost. Secondly, the soil can be stabilized and then covered as soon as possible with an asphaltic topping about ¾ or 1 inch thick. This method is now being used on main highways in Texas and should find extensive use on secondary roads. In either case, a low-cost, durable base can be provided from the existing soil without the expense of purchasing, transporting and installing gravel or crushed stone.

"In preparing a road base the soil usually is plowed to a depth of 6 to 8 inches, and the clods are broken up as fine as possible with disk harrows before the lime is spread. To obtain the best results in mixing the soil should be very dry. Sacks of hydrated lime are distributed along the road and spaced so as to provide the proper amount of lime per square yard. The clay is mixed thoroughly with the 'correct percentage' of lime and the 'optimum percentage' of moisture as determined by laboratory tests. The water is added by means of sprinklers. The water carries the lime with it as it is absorbed by the clods and the clay becomes as friable as sandy soil. This is a very desirable feature of stabilized clay soil where lime is used as the stabilizing agent

"After the lime and soil are mixed with the optimum percentage of moisture, the roadbed is thoroughly rolled with a tamping, or sheep's-foot, roller. Immediately following this procedure the roadbed should be covered either with the usual concrete or asphalt road that is being built, or with an asphaltic topping (crushed rock and asphalt) about ¾ to 1 inch thick. In either type of road the topping serves to prevent evaporation of the water which is a necessary factor in the completion of the reaction between the lime and the clay. The road base loses much of its value if allowed to dry out, even after the reaction is over. However, moisture data compiled from tests made on various parts of a hard-surfaced road over a period of three years show that the minimum percentage of moisture in clay roadbeds is well above the critical amount needed to maintain a good road base if a clay-lime mixture is used for this purpose.

Members and guests of the National Lime Association as they gathered for the annual banquet.

"The fact that the road can be topped as soon as the lime and water are mixed with the soil base is in itself a desirable feature of the lime process of stabilizing clay soils. The reaction between the clay and the lime is completed in about 20 days. However, as soon as the asphaltic topping is rolled down, the road is hard enough to be opened for traffic. In the less expensive roads the bituminous topping serves as a wearing surface for the road as well as a medium for retaining the moisture in the lime-treated clay roadbed."

In summarizing, Mr. Le Sesne pointed out that an intimate mixture of from 2 to 10 per cent. of hydrated lime is usually employed, that the mixture after being compacted with a sheep's-foot tamper must be thoroughly rolled, and that an asphaltic topping must be applied immediately to prevent evaporation of the moisture. If not covered soon afterward with asphaltic material, too much water will evaporate and thus stop the exchange absorption between the lime and the clay. The entire procedure was illustrated in a series of stereopticon slides shown while the speaker described the stabilization method.

In an attempt to answer the question, *Can the Lime Industry Learn from the Development of the New Chemical Textile Fibers?* Professor James R. Withrow, department of chemical engineering, Ohio State University, entertained his hearers with an illustrated discussion of what the chemical industries have done through research. He described the processes by which these fibers are produced and showed sample reels of the new products.

As a prelude to an address, *Freedom —Our American Dynamic,* presented by Dr. Charles Copeland Smith of the National Association of Manufacturers on Wednesday morning, a sound motion-picture, *Your Town—The Story of America* was shown on the screen. And while news vendors could be heard hawking the latest war extra through the hotel windows, Dr. Smith, a well-known radio speaker, pointed out that our 200-year record of freedom is under insidious attack by "fifth columnists" and similar un-American organizations and warned everyone to be on the alert against the rise of such menaces. Declaring that the impending May Bill, ready to be tossed into the legislative hopper in Congress, would impose an absolute dictatorship of industry, he urged that all manufacturers oppose it vigorously. His talk was interesting, easy to listen to, and brought many a chuckle because of the wit and humor he injected into it.

"The problem of industrial relations is no problem at all for the ten millions of the unemployed and, until industry can absorb these workers, we must consider that we have failed to achieve an effective system of industrial relations." So declared the next speaker, Dr. R. W. Stone, professor of industrial relations at the University of Chicago, whose talk was titled *Industrial Relations: The Problem—A Program.*

He pointed out the great differences between technical efficiency as understood by engineers—the obtaining of the greatest amount of output and the highest type of product for the least labor cost—and social efficiency as understood by sociologists—the obtaining of the greatest social gains (such as psychic and physical satisfaction for workers, cheap and useful products, etc.) at the lowest social cost (energy expenditure, injury, death, disease, etc.). Under the standards set up by engineers and approved by businessmen industry has become a materialistic function, which ignores the spiritual needs of the worker and destroys his sense of individual identity. By joining a labor union the worker raises his own opinion of himself and his place in the scheme of production; from a single individual in a horde of 50,000,000 gainfully employed he multiplies his importance to that represented by the number of members in his organization.

Dr. Stone places much of the responsibility for our failure to solve the industrial-relations problem on business cycles. Only by the adoption of a system of flexible prices (commodities, service, taxes, and the like) can these cycles be removed and the production curve be freed from the shocks of rapid upward and downward movements. All tendencies are in the direction of stabilizing prices, making them rigid, and this inevitably brings about the cyclical movements which alternately "boom" and prostrate business.

The first and most important job which industry must undertake is to provide a better medium for marketing its labor supply, fitting the man to the proper job so as to obtain the best from each worker, he declared. Every community, large or small, should have an efficient labor agency to bring worker and employer together, said Dr. Stone, and he urged that all employers utilize the existing services of the United States Employment Service as the right step in this direction.

The results of the 1939 safety competition were next reported by Mr. Brumbaugh. His report revealed that in 1939 the severity rate of accidents in lime plants decreased 19 per cent. below the previous year's rate. The frequency rate was slightly more favorable in 1939 than in 1938.

Forty-one plants took part in the 1939 contest compared with 35 plants in 1938. Fifteen plants completed the year without a single injury that caused disability to an employee for more than the remainder of the day. Five of these plants had more than 100,000 man-hours of employment during the year—the equivalent of 50 men or more working 250 days without a lost-time accident. Interest in the contest is shown by the fact that an increasing number of new plants enroll each year.

The 15 winning plants with the number of man-hours operated were:

York plant, National Gypsum Company, 285,081 man-hours.

Cedar Hollow plant, Warner Company, 237,611 man-hours.

Berkeley Plant, North American Cement Corporation, 171,139 man-hours.

Hannibal plant, Marblehead Lime Company, 137,935 man-hours.

South Chicago plant, Marblehead Lime Company, 113,586 man-hours.

Mitchell plant, Lehigh Portland Cement Company, 99,710 man-hours.

Springfield plant, Marblehead Lime Company, 98,722 man-hours.

Thomaston plant, Lawrence Portland Cement Company, 78,241 man-hours.

Thomasville plant, J. E. Baker Company, 61,563 man-hours.

Quincy plant, Marblehead Lime Company, 46,179 man-hours.

Pelham plant, Superior Lime & Hydrate Company, 39,534 man-hours.

Detroit plant, Belle Isle Lime Company, 36,488 man-hours.

Thornton plant, Marblehead Lime Company, 33,258 man-hours.

Houston plant, Haden Lime Company, 26,934 man-hours.

Cordova plant, United States Gypsum Company, 23,653 man-hours.

Loran D. Gayton, city engineer of Chicago, speaking at the industry lunch, told his hearers how lime will be used in the world's largest water purification plant, now building in that city. He talked briefly about the importance of limestone to man and other forms of life and referred to the extensive deposits in northern Illinois.

The Prevention of High-Voltage Shock Hazards on Electrically-Operated Quarry Shovels was discussed by E. L. Nicholson, application engineer of the General Electric Company. Illustrating his remarks with lantern slides, he told of the fatalities that have resulted and can result from defective wiring and "grounds" in the electrical system. He described cases in which workmen standing near, but not in contact with shovels, were electrocuted by the passage of high-voltage current through their bodies. He described various means for eliminating or controlling these hazards.

In his paper on *The Use of Pulverized Coal for Calcining Limestone* S. B. Kanswitz of the Raymond Pulverized Division, Combustion Engineering Company, Inc., reviewed the history of pulverized-coal burning in the lime and cement industries. He described the original method of grinding fuel and subsequent storing of it as contrasted with the more modern method of direct firing.

Plant Design for the Production of Low-Cost Lime was discussed by Victor J. Azbe, consulting engineer. After referring to the many changes taking place in the lime industry and the necessity for reducing the cost of production he told of plants in which lime can be made and loaded in cars for $2.50 a ton. In one such plant, which had been mechanized rather fully, one man in 8 hours charges the kilns for the full 24-hour period. The capacity of the plant is 125 tons. He compared this plant with a non-mechanized plant and quoted the following data on their quarry operations:

	Mechanized Quarry		Non-Mechanized Quarry	
Lime produced, *tons*	2,900		2,052	
Stone shipped, *tons*	14,400		None	
Labor:	No.	Hrs.	No.	Hrs.
Foreman	1	200	1	200
Drillers	2	600	7	1,090
Powder men	..	....	2	311
Swampers	2	632	..	....
Breakers and loaders	..	....	24	3,448
Shovel men	1	234	..	....
Motor men	..	....	4	621
Truckers	4	1,020	..	....
Track laborers	..	....	4	661
General laborers	..	....	1	180
Miscellaneous laborers	2	424	..	....
	12	3,110	43	6,511
Stone per quarry-hour, *tons*		6.3		0.92

For the mechanized plant he quoted these figures also:

Quarrying and crushing	5,860 hrs.
Kiln plant	3,650 hrs.
Hydrating and general labor	3,080 hrs.
	12,590 hrs.
Lime made	2,900 hrs.
Stone crushed and shipped	14,000 hrs.

He specified 30 men as the maximum required to produce 125 to 150 tons of lime and only 6,000 to 7,000 tons of stone. There would be 7 men in the quarrying and crushing, 10 in the kiln plant, 4 in the hydrating plant, 3 in the shop, 1 clerk, and 5 miscellaneous laborers. In addition there would be a watchman.

G. L. Clark, professor of chemistry at the University of Illinois, presented some of the results of *X-Ray Studies of Lime with Practical Conclusions.* He described, and illustrated with lantern slides, the equipment used to make X-ray pictures of lime and showed the characteristics of different kinds of lime subjected to different treatments as revealed by the X-ray.

At the opening of the final session on Wednesday a colored motion picture, entitled *Green Acres,* produced by the National Fertilizer Association, was shown. It illustrated the effects of adding lime to the soil in growing feed and other crops.

The advantages of using lime were discussed in detail by Dr. Jackson B. Hester, soil technologist, department of agricultural research of the Campbell Soup Company. His examples were drawn from the results obtained in growing tomatoes in New Jersey.

Walter C. Voss, professor of building consruction, Massachusetts Institute of Technology, reported on the progress made in *Further Tests on the Use of Lime in Concrete.*

Howard R. Staley, Professor Voss' assistant, reported on progress in the study of volume changes in mortar.

The convention reëlected all the 1939 officers and all the old directors except for District 15, in which no election has yet been held. The chairman of the board is K. L. Hammond (Keystone Lime Works, Keystone, Alabama); president and general manager, S. Walter Stauffer; treasurer, James H. McNamara (Eagle Rock Lime Company, Eagle Rock, Virginia); secretary and assistant treasurer, W. Vernon Brumbaugh; assistant secretary, Miss Roma F. Medford. The executive committee includes K. L. Hammond, Reed C. Bye (Warner Company, Philadelphia, Pennsylvania); Henry La Liberte (Cutler-Magner Company, Duluth, Minnesota), Bernard J. McNulty (Marblehead Lime Company, Chicago), and Fred Witmer (Ohio Hydrate & Supply Company, Woodville, Ohio).

Industrial Sand (from page 28)

standards for the different industries.

To the foundry code the American Foundrymen's Association has voiced objections on account of the mechanical requirements, such as relate to ventilation and the like, and the National Industrial Sand Association decided to support the A. F. A. objection on the same ground. The code's provisions conflict with the recommendations of the Advisory Committee of which Mr. Ahearn is a member, hence the decision of the N. I. S. A. to support the A. F. A. in its request for withdrawal or amendment of the code proposed.

At a recent hearing before the Senate Committee on Education and Labor Mr. Waters appeared to testify regarding the possible effects of a proposed bill (S. 3461) introduced by Senator Murray of Montana. This bill proposes among other things that industrial-hygiene divions, established by the states under any state compensation plan, should, in order to gain the approval of the Secretary of Labor, be established in state departments of labor rather than in state departments of health.

Mr. Waters referred to the case of the *Grain Handling Company v. C. J. Sweeney and E. J. McManigal, Commissioner,* in which a man who had worked as a grain scooper for 25 years, the last 12 of which were in the employ of the grain company named, suffered from tuberculosis in 1918. The disease remained dormant until 1934, when, while in the employ of that company, it became active again. The court held that his employment required him to work "in thick grain dust, causing the latent tuberculosis to become active" and that, therefore, the injury sustained was an occupational disease. A concurring opinion said: "In effect, we are holding that the lighting up of a latent tuberculosis by the breathing of grain dust created an 'occupational disease' in the particular employee so affected, although 99 per cent. of the workmen may never get tuberculosis as a result of laboring under the same conditions for equally long periods of time." The decision will have the effect of making tuberculosis, which has been latent and become active by exposure to any kind of dust, a compensable disease, in Mr. Waters' opinion.

The convention elected the following new officers for the coming year:

President: L. M. Hansen.

Vice-President: J. M. Strouse.

Treasurer (reëlected): Ralph T. Stevens.

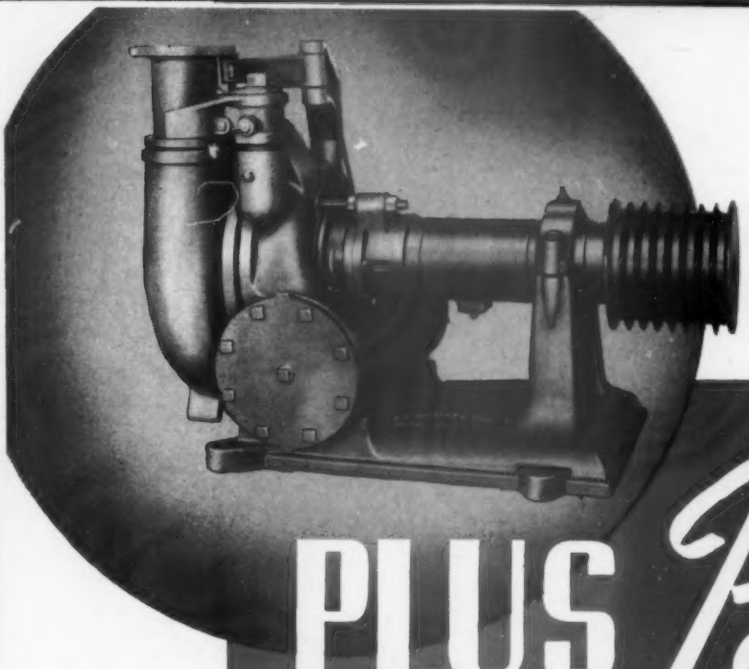
Directors (new): Amilton Allport and C. M. Hardy.

Directors (reëlected): E. J. Beyer, Mark T. McKee, A. J. Miller, W. J. Woods.

Past-President Russell G. Hay automatically becomes a member of the board, succeeding A. Warsaw. P. S. McDougall, member of the old board, resigned on account of ill health and will take a year's leave of absence from his business. He was unanimously voted the association's first honorary member.

PIT AND QUARRY Special

CEMENT-MILLS SECTION



TRUE High Efficiency

PLUS COST SAVING Performance

HIGH EFFICIENCY that actually increases output and reduces expense is evidenced by cost-saving records made by the new High Efficiency Wilfley pump shown above. Exclusive features of design and construction enable these pumps to operate continuously, without attention, in 24-hour shifts over long periods of time. They deliver a new standard of true high efficiency in handling slurries—with true WILFLEY *dependability* at all times. Write for complete details.

A. R. WILFLEY & SONS, INC., Denver, Colo., U. S. A.

New York Office: 1775 Broadway, New York City

WILFLEY

centrifugal PUMPS

ROTARY KILNS

UNAX KILNS
FOR
LIME BURNING

UNAX KILNS
FOR
CEMENT

SINTERING KILNS
FOR ORES, PHOSPHATES, ETC.

F. L. SMIDTH & CO.

60 EAST 42ND STREET ENGINEERS NEW YORK, N. Y.

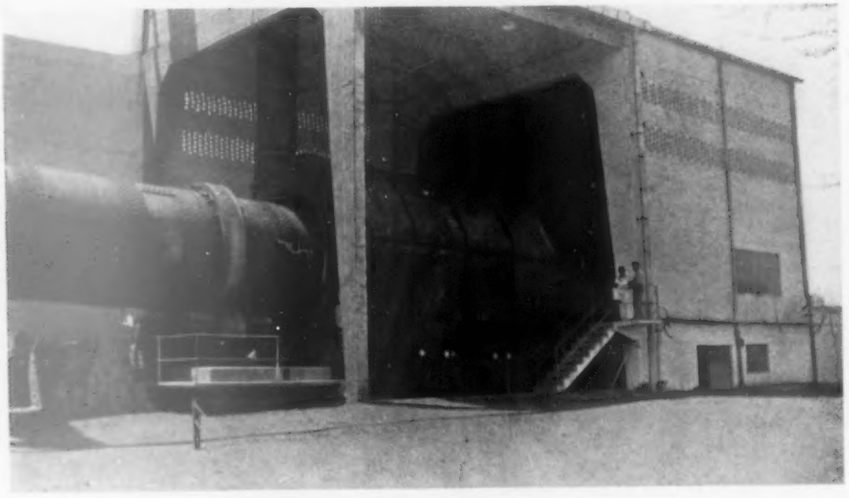
CEMENT–PLANT IMPROVEMENT PROGRAMS

Name of Company	Nature of Improvement
Alpha Portland Cement Company	Erecting eighteen storage and blending silos at its Cementon plant.
Monolith Portland Cement Company	Has awarded contract for another rotary kiln as part of a $1,000,000 improvement program.
Permanente Corporation	Adding a third kiln, new ball mills and planning other improvements at new Los Altos, California, plant.
Lone Star Cement Corporation	Has authorized $1,856,650 for 1940 additions and improvements to its various plants. New storage, loading and packing facilities being installed at Hudson, N. Y., plant at present.
Lehigh Portland Cement Company	Rehabilitation of Alsen, N. Y., plant nearing completion at cost of about $2,500,000.
Medusa Portland Cement Company	Installed unit pulverizers at Wampum plant, recuperators at York and Bay Bridge plants.
Diamond Portland Cement Company	New clinker-storage building with considerable new equipment.
Nazareth Cement Company	Installed ten direct-firing coal mills on kilns and stone driers.
Southern States Portland Cement Company	New crushed-stone screening and storage plant under construction.
Coplay Cement Manufacturing Company	Pneumatic coal-handling system to be installed with direct-firing mills on each kiln and driers. Latest type bin-signal and control equipment also to be installed.
Valley Forge Cement Company	Installing preliminary crushing and air-separating equipment. Also remodeling flotation department.
Marquette Cement Manufacturing Company	Improving its various plants, including revamping of raw-mixing system at Cape Girardeau. Just awarded $100,000 contract for addition to Memphis distributing plant.
National Portland Cement Company	Installing Breerwood flotation system at Brodhead, Pennsylvania, plant.
Universal Atlas Cement Company	New storage silos at Hudson plant.
Ford Motor Company	Adding grinding equipment at Dearborn cement plant to increase capacity about 30 per cent.
Columbia Cement Division, Pittsburgh Plate Glass Company	$100,000 improvement program in progress at East Fultonham, Ohio, including silos, packers, conveyors and unit pulverizers.
Southwestern Portland Cement Company	$250,000 modernization program, including closed-circuit wet-grinding system and other equipment at Victorville, California.
Hawaiian Gas Products, Ltd.	Testing deposit preparatory to specifying equipment for new cement plant at Waianae.
Dufferin Paving & Crushed Stone Company	To erect new Portland-cement plant at Montreal.
Santa Cruz Portland Cement Company	$800,000 improvement program in progress this summer at Davenport, California, including Lepol kilns and new storage facilities.
Volunteer Portland Cement Company	Direct-firing mills replacing old coal plant.
Petoskey Portland Cement Company	Air separator and dust collector system installed.
Glens Falls Portland Cement Company	Has under construction a new $25,000 crushing plant.
Kosmos Portland Cement Company	Erecting new raw-material storage silos; adding equipment in raw- and finish-grinding departments; completing dust-collecting installation.
Edison Cement Corporation	Installing dust-collectors at New Village plant. Other major improvements scheduled for autumn.
Whitehall Cement Manufacturing Company	New compression testing machine, drag-line, and two well-drills.
Pacific Portland Cement Company	Improving dust-collecting system in raw-and clinker-grinding departments. Erecting $1,000,000 wharf and warehouse on Sacramento River in California.

By ALFREDO BARTHOLOMAI
Superintendent, Compania
Industrial Nortena, S. A.

Portland-Cement Plant in Argentina Serves a Rich Agricultural Region

General view of the Coinor cement plant at Frias, Argentina.



Grate cooler for clinker and building which houses the oil-burning system.

View showing part of the crane structure and slurry tanks.

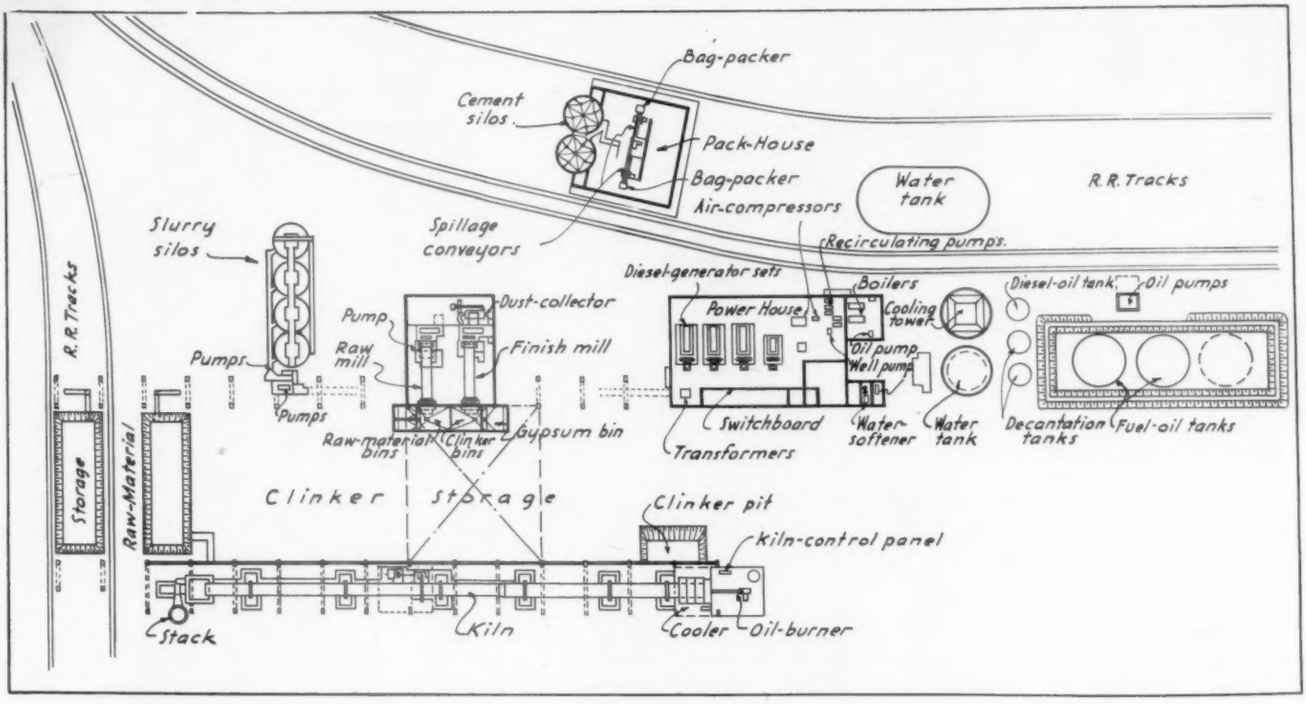
IN the interior of the Argentine Republic there is an important industrial center—the Province of Tucumán with its 34 "ingenios," as the sugar works are called there. Extensive agricultural areas are to be opened in the next few years by means of dams for irrigation purposes. The demand for Portland cement already existing and still to be expected justified the construction of a local cement plant by the Compania Industrial Nortena, S.A.

The most favorable location in the entire area was found after thorough investigations to be the limestone deposit at the village of Frías in the province of Santiago del Estero. The quarry is located at Ancaján, at a distance of 30 kilometers (18.65 miles) from the plant. The quarry and plant are connected by a stretch of the Frías-Santiago del Estero railway and a branch line of 1-meter (39.37-inch) track built for this purpose. The railway operations are conducted by the State Railway. In addition, a high-tension transmission line (20,000 volts) and a telephone line were installed between the plant and the quarry. On account of the sparse population and the complete lack of fresh water, the erection of the plant in the immediate proximity of the stone quarry was not possible.

The Precambrian crystalline limestone varies in its composition within comparatively broad limits, and yields upon appropriate mixing, without the addition of clay, a clinker of the following composition:

CaO = 66.45 per cent.
SiO_2 = 20.85 per cent.
Al_2O_3 = 5.87 per cent.
Fe_2O_3 = 3.01 per cent.
MgO = 2.84 per cent.

There are no particularly remarkable features about the operation of the quarry. Six-inch drill holes are bored with a Cyclone drill, and shot in series of 6 to 8 holes. Six Ingersoll-Rand jackhammers, receiving their compressed air from a two-stage Ingersoll-Rand compressor Type 2-75, are available for breaking down the blocks. The loading of the stone is done by means of a Marion Type 450 steam shovel of 1½-cubic yard dipper capacity. The fuel is wood, which can be obtained in



Sketch showing lay-out of the plant buildings and production equipment.

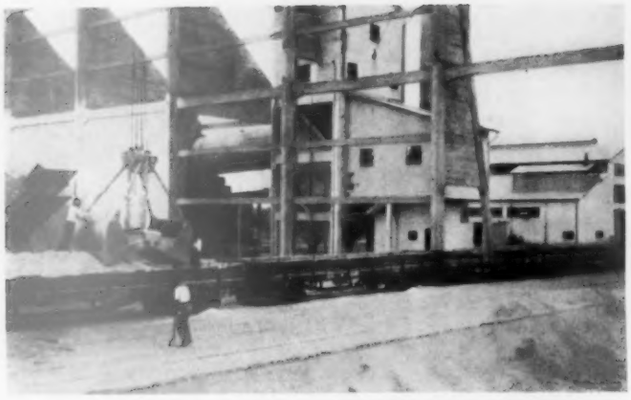
the vicinity at a low price and in sufficient quantities. Transportation to the crushing plant is accomplished by side-dump steel cars on 1-meter tracks, with Deutz semi-Diesel locomotives.

In order to simplify the handling of the material it seemed to us most suitable to establish the crushing plant for the limestone in the vicinity of the quarry, and this has in fact worked out well. The dump cars come over a reinforced-concrete trestle, 8 meters (26.25 feet) high, into the crushing plant and are there dumped—at the present time, still by hand—into the hopper of the feeding apparatus. The grizzly of the feeding apparatus provides a uniform feed to the Allis-Chalmers 24- by 36-inch jaw crusher, and is driven from the main shaft of the latter by a belt over a tight and loose pulley. The outlet opening of the primary crusher is adjusted to the condition existing in the hammer-mill, and varies between 3 and 4 inches. The material so broken down falls on an inclined belt-conveyor of 36-inch width and about 15 meters long. The belt-conveyor is driven from the main shaft of the hammer-mill by belt and chains, so that if the hammer-mill stops on account of the breaking of the safety pins the feed is automatically stopped.

From the conveyor the material falls on a 4- by 10-foot low-head heavy-duty vibrating screen (Allis-Chalmers), where the material under 1 inch is screened out. For the protection of the 1-inch screen a second deck with 2-inch mesh is provided. The stone is then put through secondary reduction in a Polysius hammer-mill, Type Z XIV, and falls, along with the material screened out by the vibrating screen, direct into railway cars, which are pushed slowly along under the loading chute.

Transport bridge and crushing plant near the quarry.

A view showing the concrete supports for the crane runway and the kiln.



Crane unloading limestone cars. In the background the dust-chamber and slurry-feeder building may be seen.

A view inside the power-house showing the Diesel-driven generating equipment with a total of 3,175 horsepower.

The gypsum is quarried at a distance of 12 kilometers (7.45 miles) from the stone quarry. It is hauled by mules, in two-wheeled carts, to a place alongside the quarry track. There it is loaded into dump cars, and once or twice a week is crushed in the same way as the stone and loaded into cars.

The unloading of the stone at the plant is done by hand, with the aid of the crane, which distributes the material to different piles, according to the chemical composition. In this manner it is possible later to achieve an approximately correct mixture right in the mill silo, so that correction in the slurry silo is necessary only within a quite narrow limit.

The traveling crane has a track width of 35 meters (114.83 feet) and the clam shell bucket a capacity of 4½ tons, making possible an hourly handling capacity of up to 140 tons. The raw material also is transferred by it from the pile to the mill silo, and the clinker likewise from the clinker pit to the pile and from the pile to the mill silo. The height of the crane's rails is 20 meters above grade, and the upper edge of the mill silo is 15 meters (49.21 feet) above grade. The length of the track is 170 meters (557.74 feet).

Taking into account the different pits for stone, kiln dust and clinker, it is possible to store about 10,000 tons of stone and over 20,000 tons of clinker. Three silos of 600, 300 and 300 tons capacity are provided for the raw mills —one silo for an approximately correct mixture, one for high-calcium limestone, and the third for possible admixtures.

The feeding of the raw mills is done by means of three table-feeders. The water added is corrected according to the hourly slurry controls and varies between 33 and 34 per cent. The Unidan raw mill has a diameter of 2.4 meters (7.87 feet) and a length of 13 meters (42.65 feet) and is centrally driven through an F. L. Smidth Symetro gear and direct coupled 875-horsepower 735-r.p.m. induction motor.

For the transportation of the slurry a Size III Doppelpressor of Polysius make is installed. For the mixing and homogenization of the slurry four silos of 8-meter (26.25-foot) exterior diameter and 14 meters (45.93 feet) high, and an effective capacity of 600 cubic meters (784.16 cubic yards) each, are provided.

The pneumatic mixing is automatically controlled by a Regulex made by Polysius. In addition, each silo has a mechanical agitating apparatus in the bottom in order to prevent the settling of the slurry. From the silos the slurry flows to a small collecting sump and thence to the two 4-inch slurry pumps, of which only one operates and the other stands available as reserve.

The kiln is 113 meters (370.64 feet) long and is 2.70 and 3 meters (6.16 and 9.84 feet) in diameter. The slurry feed is synchronized with the kiln motor. Beginning at the mouth of the kiln, there is installed a system of chains, which, after various experiments, was fixed at a length of 16.8 meters (55.10 feet). The smoke chamber is constructed of reinforced concrete. The kiln has an F. L. Smidth grate cooler. The clinker leaves the cooler over an inclined chute and falls into a pit 13 meters deep without further conveying equipment. This pit has a capacity of about 500 tons, so that, even in the case of a short shut-down of the crane for repairs, the kiln's operation is not necessarily interfered with.

The entire control of the kiln is accomplished from a central switchboard, which contains all the necessary indicator instruments and push buttons for the control of the kiln and fan motors.

The fuel-oil is fed through a pair of filters to the fuel tank of 9 cubic meters (11.79 feet) capacity and there preheated to 80 to 90 degrees C. The fuel-oil is moved by means of two duplex steam pumps, the exhaust steam from

The elevated water-tank and cooling tower.

A view inside the clinker-storage building.

which is utilized for the preheating of the fuel. Through pressure filters the oil goes to the oil superheaters, where it is heated to around 1,200 degrees C., and then goes to the kiln burners.

From the clinker pit mentioned above the clinker is conveyed by the grab crane to the storage shed, where 20,000 tons of clinker can be stored without difficulty.

The mill silos for clinker and gypsum

Cement silos and the pack-house.

are located near the limestone silos and the cement mill is situated in the same building as the raw mill. Two table feeders, Polysius system, of 1.80- and 0.75-meter (5.9- and 2.46-foot) diameter, make it possible to feed the clinker and the gypsum in the correct proportions to the cement mill. The mill is a Polysius three-compartment compound mill of 2.40-meter (7.87-foot) diameter and 13 meters (42.65 feet) long. It is centrally driven by a 1,020-horsepower induction motor through a Demag reduction drive with a three-stage reduction ratio of 960 to 19 r.p.m. An interesting detail is that the last gear of the reducer is mounted directly on the trunnion of the mill, without the installation of any intermediate coupling. Some reduction of vibration in the operation is accomplished by installing spiral springs in the large gears between the gear ring and the hub.

The mill is powerfully ventilated and cooled by means of an exhauster. The cement sucked out by the exhauster is recovered in a Polysius Bethlehem cloth-tube filter of 72 tubes, and from there is fed along with the product of the mill to a Cera pump. Each filling of this Cera pump corresponds to about 3 tons of cement. The pump operates fully automatically. The electric reversal is accomplished by compressed air. The approximately 70-meter (229.6-foot) horizontal and 35-meter (114.8-foot) vertical distance between the Cera pump and the cement silos is traversed by a pipe conduit of 4-inch clear size.

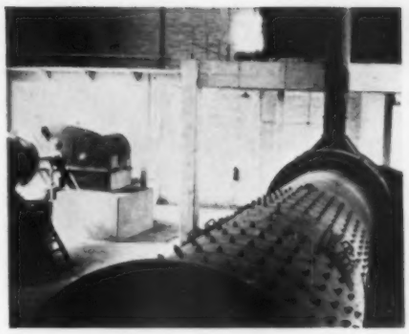
At present two silo cells, each 8.60 meters (28.21 feet) in diameter and 27 meters high, are provided. In this installation, as in the entire plant, the possibility of expansion was taken into consideration. Each silo has four discharge openings and on the bottom of each silo cell 48 agitating plates, Polysius system, are installed, making possible a good loosening and intermixing of the contents of the silo by means of compressed air. The removal of the cement is also done pneumatically.

The mixture of cement and air flows through pipes to the only bucket-elevator in the entire plant. It is a Polysius elevator 16 meters (52.48 feet) high with buckets 400 millimeters (15.75 inches) wide. From this the cement passes through screening screw-conveyors of 300 by 500 by 3,000 millimeters (11.91 by 19.68 by 119.11 inches) to the temporary bunkers over the packing machines. Two 3-tube packer units, with which it is easily possible to pack 60 tons per hour, are installed. The conveying between the packing machines and the railroad cars is done with push

The mechanical agitators atop the slurry tanks.

trucks. The cement at present is shipped exclusively in sacks (jute or paper) of 70-kilogram (164.28-pound) capacity. The entire packing plant is symmetrically arranged with loading tracks on both sides of the packing room. The spilled cement is returned by means of screw-conveyors to the bucket-elevator. Good dust removal in the packing room is provided by the installation of two Sly filters.

The necessary electric power for the plant and the quarry is produced in the factory's own power-plant. Three vertical 6-cylinder 900-horsepower Benz Diesel engines and one of 475 horsepower are installed. These operate on a four-stroke cycle with injection into the mixing chambers without compression. The three large engines use fuel-oil of a specific gravity of 0.96. Diesel



One of the finishing mills.

oil (special grade 0.88) is used only in starting. The smaller engine operates on its own mix of the two fuels.

Before its use as fuel in the Diesel engines the fuel-oil is prepared in settling tanks and by means of centrifuges in order to remove asphalt and other impurities. After preheating to 60 degrees C., it is fed through pressure filters to the engines. This careful preparation assures a dependable continuous operation of the engines. The lubricating oil of the engines is also continuously centrifuged and re-used.

The engines are direct-connected to A.E.G. generators producing three-phase alternating current of 3,150 volts. The entire distribution of current is handled through one large switchboard. Automatic regulation of the voltage is accomplished with an A.E.G. Tirrills system. All the main switches are Siemens system expansion switches, and so far as is known to us, this represents the first installation of this system in South America. These switches operate without oil and fire hazard is in this way considerably reduced. These switches, as well as all other switches on the switchboard, are actuated by compressed air. All the main current circuits are provided with meters so as to make possible control of the con-

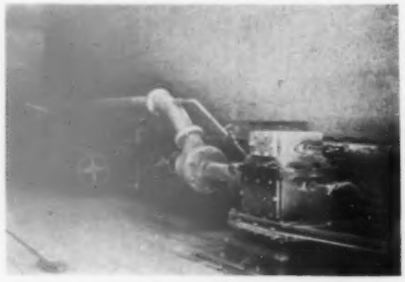
Hand-loading a car in the quarry. Well-drill at right.

sumption in the individual departments of the plant.

As in our region it ordinarily does not rain from May to December there is a great deal of dust. It has already been possible to reduce the dust nuisance greatly by plantings, but it is still necessary to make special provisions for the power-plant. The whole building can be closed up almost air-tight and then two fans of 35-cubic meter (45.85-cubic yard) second capacity force the air through Delbag-Viscosin filters in the basement of the building. Each of the Diesel engines has a suction chamber with the same filters, and in this way we obtain a dust-free combustion air, which naturally contributes to the protection of the engines.

Table feeders in the raw-grinding department.

In the same room housing the Diesel engines there are also located the air-compressors and water pumps. An Ingersoll-Rand Type XVH compressor of 33-cubic meter capacity, which is driven by a direct-connected 200-horsepower General Electric synchronous motor, serves for the production of the compressed air required in the operation. An Ingersoll-Rand 75C compressor of 10-cubic meter capacity and a B.T.H. 70-horsepower motor are on hand for reserve. The water is obtained from two wells each 60 meters deep with deep-well pumps, Type K.S.B., and is pumped to an elevated tank of 200-cubic meter (262-cubic yard) capacity. The cooling water for the motors and for cooling the bearings of the mills and the kiln is softened by a Zerolite apparatus by the Permutit process. It is kept available for the operation in a receptacle of 150-cubic meter (196.5-cubic yard) capacity installed inside the elevated tank mentioned above; in addition a basin of 1,500-cubic meter (1,965-cubic yard) capacity is provided as a reserve. The cooling water returning from the machines goes through an oil separator to a collecting tank and is pumped from this to a wooden cooling tower.



Part of the pneumatic conveying system which serves the cement-storage silos.

The fuel-oil is received in tank cars and is emptied by gravity into an underground tank of 100-cubic meter (131-cubic yard) capacity. Two steam pumps convey the fuel-oil to the storage tanks, of which two are provided, each with a capacity of 1,000 tons, or to the different points of use. The exhaust steam from the pumps serves, to the extent that it is needed, for preheating the fuel-oil. The steam required for the operation of the pumps and for heating the fuel-oil is generated in two Ruston-Hornsby boilers of 39 square meters heating surface each, of which one is now being fired experimentally with wood which is abundantly available in the vicinity.

A laboratory with modern equipment is provided for the control of production, outfitted with all the apparatus and machines that are necessary for the raw-material, cement and fuel analyses. It consists essentially of five rooms: (1) office for the chemist, (2) scale room, (3) chemical laboratory, (4) physical laboratory, and (5) cellar.

The work tables in the chemical laboratory are covered with asbestos board, which contributes greatly to the saving of the glassware. The specimens are stored in a special cabinet in the cellar. In this manner it is possible to maintain a uniform temperature more easily. In addition, the installation of a weather station is at present being considered.

The design of this plant was executed by the general superintendent of the "Co-i-nor" and two other cement works, Dr. Ing. Hans Becker, and the author of this article, under the direction of Alfredo Fortabat, president of the three works. All construction drawings were prepared in the company's own office.

In working out the design special regard was paid to the fact that in this vicinity skilled laborers are not easy to get. Consequently we tried to make the plant as simple as possible, and yet achieve dependability of operation. How successful this plan was is shown by the fact that the cement plant proper (not including the power-plant and packing room) operates with one foreman and five men per shift. As there are not enough housing facilities in the little village of Frías, 20 residences have been built for a part of the workers and 10 houses for officials.

The construction work was in charge of the Siemens-Bauunion. The equipment was furnished by various companies, as is apparent in the foregoing description. The construction work began on February 24, 1937, and the first clinker came out of the kiln on December 24 of the same year.

Deposits of Iceland Spar Diminishing

Calcite in the form of limestone and marble is available in vast quantities in many states, but perfectly crystallized, water-clear, flawless calcite is hard to find. Flawless crystal fragments are used in making Nicol prisms, which are essential parts of every polarizing microscope. They are used also in saccharimeters, photometers, dichroscopes, colorimeters, and polariscopes. Although the quantity used is small, it is a necessary element for which no satisfactory substitute has been found. Originally this rare and special form of calcite known as Iceland spar was obtained almost exclusively in Iceland, but the deposits in that country are virtually exhausted and makers of optical instruments must seek it elsewhere.

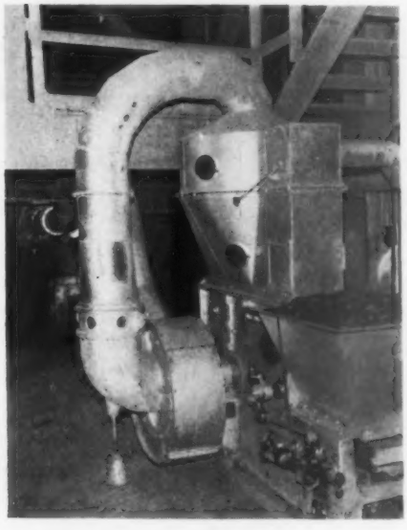
The principal source of supply during recent years has been the Kenhardt district of northwest Cape Province, Union of South Africa. Satisfactory material also has been obtained in Spain, but during and subsequent to the revolutionary period this source has been unavailable. It is reported, also, that good Iceland spar has been obtained in the Scandinavian countries.

Only limited supplies have been obtained at any time in the United States. Small quantities have been obtained near Greycliff, Montana, Cedarville, California, and a few other localities, but these sources have furnished virtually no supplies during recent years. Much interest is now centered on a deposit recently discovered in the Copper Mountain Mining District, Taos County, New Mexico, about 30 miles southwest of Taos. As described by J. Harlan Johnson in *The Mines Magazine* for February, 1940, the Iceland spar occupies a tubular or conical space about 20 feet in diameter at the surface. It is situated on a fault plane. Although much calcite is present, that of commercial quality for optical purposes constitutes a relatively small part of the total and is confined to border crystals that have grown into the clayey decomposed schist. No estimate of the extent of reserve is available. Users report that it is of satisfactory quality.

Perfectly crystallized flawless fluorite (calcium fluoride) is another important mineral used in optical instruments, though its properties and uses are quite different from those of Iceland spar. (*Oliver Bowles, Bureau of Mines.*)

Direct-Firing Coal Mills Now Serving Nazareth Plant's Eight Rotary Kilns

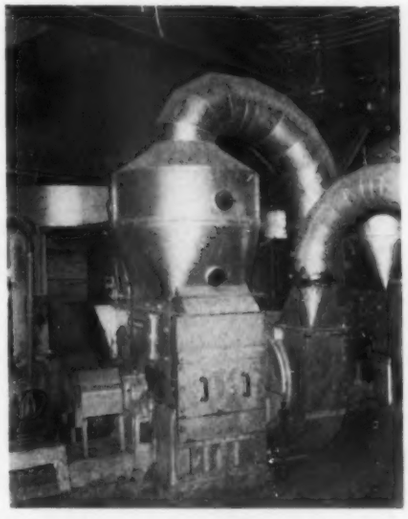
PROBABLY the most definite and extensive trend in the cement industry in recent years has been the replacement of old-style coal-grinding and drying departments with various types and makes of direct-firing coal grinding and drying mills. These installations have been uniformly successful in promoting more uniform and efficient burning, in lowering fuel consumption and increasing kiln capacity and in eliminating the dust nuisance, maintenance cost, etc., of the old systems. A long series of articles have been published in PIT AND QUARRY describing such installations and the results obtained with them from every conceivable angle, but occasionally one of the many such installations constantly being made has features which justify its description.



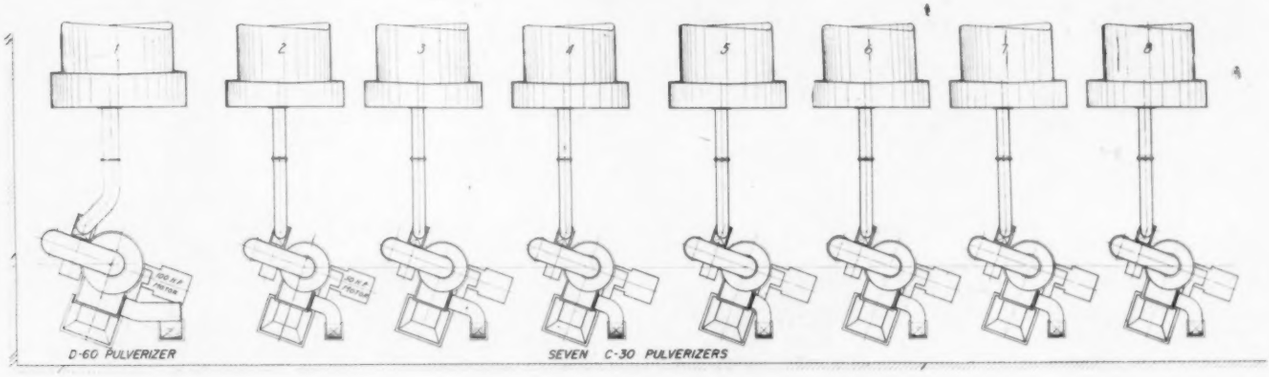
Mill used for firing one of the two rock driers which is visible in background.

Such an installation was made recently in the plant of the Nazareth Cement Company at Nazareth, Pennsylvania, one of the older plants in the Lehigh Valley. The old coal mill building with its four old-type Fuller mills, two rotary driers, and other equipment, was becoming more and more expensive to operate and keep in repair, and these factors led to the decision to install direct-firing mills. The selection of the type of mills installed was governed largely by space and weight considerations. The mills had to be installed on the burner floor under which are vertical coolers. There was very little space either vertically or horizontally, and the floor was not designed for heavy loads.

These considerations led to the selection of the comparatively light and compact Strong-Scott Unipulvo mills. Even so the floor had to be reinforced to safely support their weight. A No.

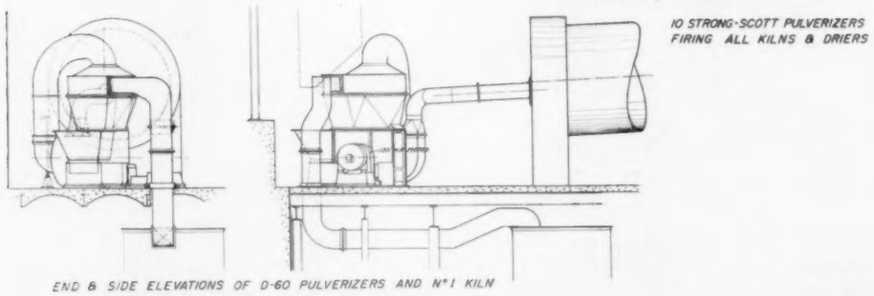


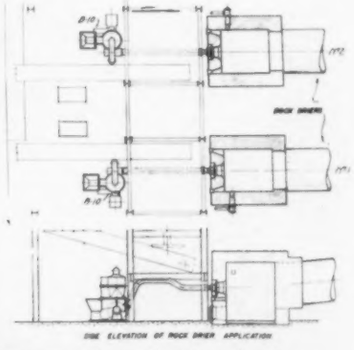
One of the mills firing the seven 7½- by 6- by 120-foot kilns.



PLAN OF KILN-FIRING AISLE
NAZARETH CEMENT COMPANY
NAZARETH, PENNSYLVANIA

10 STRONG-SCOTT PULVERIZERS
FIRING ALL KILNS & DRIERS





General arrangement of the direct-firing coal systems in the plant of the Nazareth Cement Company, Nazareth, Pennsylvania.

D60 Unipulvo mill was installed on the 9- by 120-foot No. 1 kiln and No. C30 mills were installed on the 7½- by 6- by 120-foot kilns. Five of these mills were started up on May 20 and the other three are connected up ready to go whenever the other kilns are started up. At about the same time two No. B10 Unipulvo mills firing two 6½- by 75-foot rock driers were started up. These three sizes of mills are rated, in the order mentioned, at capacities of 6,500, 3,500, and 1,000 pounds per hour. They are driven, respectively, by 100-, 50-, and 15-horsepower motors. A new coal storage- and handling-system was also installed.

Formerly a 12-inch by 175-foot screw conveyor fed coal from the old mill building into eight 6-ton steel kiln-feed bins. In these bins were slowly-revolving agitators to insure even feed to the 5-inch multiple-flight coal-feed screws. These screws were equipped with variable-speed motor control and standard blast pipes were used.

In the present setup the same screw

Batch scale which feeds coal on conveyor to mill feed bins. Suspended magnet in foreground.

conveyor and bins are used but the latter have been turned completely about so that their tapered sides now face away from the kilns. Accompanying photographs show how this resulted in a considerable saving of space. As before, coal is discharged from the screw conveyor into each of the bins in such a way that any excess over the capacity of a bin is carried on to the next. As there is no overflow-return from the last bin its level is closely watched to control the rate of feed to the entire system. Coal is discharged by gravity from these bins through spouts into the mill hoppers. No additional controls are necessary.

Under the old system about 25 per cent. of the combustion air was primary

This view from above the kilns shows some of the eight direct-firing mills. Above at right are their feed bins and the coal screw conveyor.

air at room temperature. Now about 50 per cent. of the total is primary air which reaches the kiln at about 180 degrees F. This is drawn from the kiln hood at about 400 degrees F. and is tempered with room air to bring it down to about 280 degrees in the mill. As before, secondary air is also drawn from the kiln hood at about 400 degrees F. After experimenting with various sizes the company has adopted a 9-inch diameter burner pipe as standard and this has Strong-Scott diffuser fingers which break up any stratification and insure an intimate mixture of the coal and air.

According to company officials, the use of these mills has resulted in a con-

The new coal storage silo with batch scale and conveyor at right not yet enclosed.

siderable increase in kiln capacity with about the same coal consumption as before. The large kiln formerly produced 50 barrels of clinker per hour, and each of the small kilns produced 25 barrels. Burning temperatures in the kilns can now be more closely controlled resulting in a higher quality and more uniform clinker. Detailed figures on results obtained are not yet available.

The coal is received as before in a track hopper from which it is fed to a Pennsylvania roll-crusher. The 1-inch minus crusher product is elevated into two new 112-ton capacity steel tanks or into a Richardson 500-pound capacity batch scale. Coal can also be withdrawn from these tanks by screw conveyors for recirculation to the batcher. Coal is discharged from the batcher on an inclined belt conveyor feeding the screw conveyor over the coal-mill bins. A suspended magnet over the belt conveyor removes any iron present. Manhattan conveyor belting and Johns-Manville cement-asbestos siding are used.

The two stone driers were formerly fired by hand through fireboxes. Their Unipulvo mills are now fed by hand from wheelbarrows but a mechanical feed system will soon be installed. Under the same operating conditions and at the same capacity, these driers each now consume 450 pounds of coal per hour instead of the 750 pounds formerly required, a saving of 40 per cent. With the mills the temperature in the driers is kept more consistently near the ideal of 1900 degrees and a 150-degree exit temperature is maintained to keep the dust from forming moisture in the dust collectors.

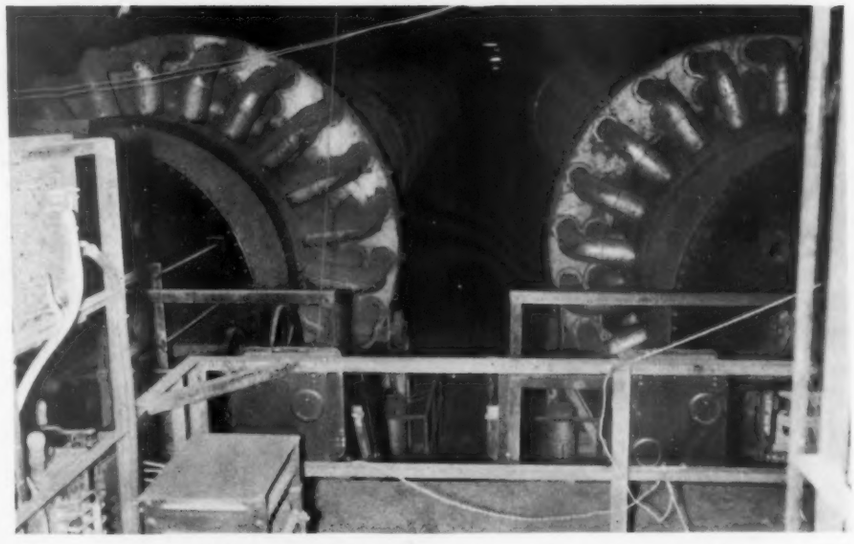
GLENS FALLS ADDS KILN RECUPERATORS

THE Glens Falls Portland Cement Company, Glens Falls, New York, has for many years been improving its plant in various departments, replacing obsolete equipment and doing everything possible to increase efficiency and lower operating costs. An article published in the January 13, 1932 issue of PIT AND QUARRY described the improvements made up to that date, the latest being a 382-foot Smidth rotary kiln which had been installed in place of two of four existing 120-foot kilns.

No other important changes were made in this department until early in 1939 when Manitowoc Engineering Works Vanderwerp short-plate recuperators were installed on the two remaining 10- by 250-foot kilns. These are equipped with Chicago Steel Foundry Company Pyrasteel plates in their high-temperature sections. The clinker is discharged as before to rotary coolers and then to storage. According to company officials the recuperators have increased kiln capacity and lowered coal consumption per barrel. This installation has also resulted in better grindability and autoclave tests. Two years ago Leeds-Northrup radiation pyrometers were installed on these two kilns for better control.

The only other important change in the mill was made in the clinker-grinding department during the winter of 1937-38. Two 16-foot Sturtevant separators were installed in closed circuit with the five No. 18 Smidth final-grinding tube mills. Both the fineness and output of finished cement were increased by this installation. Preliminary clinker grinding is still done with Smidth Kominuters.

One of the two new 16-foot separators in the finish-grinding department.



The new short-plate recuperators on the two 10- by 250-foot kilns.

This picture shows the compactness with which the separators and their conveyors and elevators had to be installed to fit the available space.

At present work is progressing on a complete revision of the quarry haulage and crushing department which had been unchanged in many years. This work will be completed late in the year. Due to the variations in the quality of the stone in the quarry and the fact that no clay is used in the mix it became necessary to install a more flexible haulage system. The locomotives and cars are being replaced by four truck-trailers of 10 to 12 tons capacity each. Formerly the cars were hauled up an incline to the crushing plant by a hoist and cable. The Allis-Chalmers 30-inch McCully primary crusher is now being moved down into the quarry and rock will be discharged into it from the truck-trailers. A 48-inch by 76-foot belt conveyor will carry the stone to a Williams Jumbo hammer-mill and an Allis-Chalmers Pulverator for further reduction. A 30-inch by 367-foot belt conveyor will carry the finished stone out of the quarry to a V-bottom steel storage bin of 850 ton capacity. No change will be made in the method of haulage from this point to the plant, a distance of 1500 feet. This will be done with steam locomotives and cars. It is expected that the three 1¾-cubic yard electric shovels now used in the quarry will later be replaced by larger machines.

STURTEVANT

AIR SEPARATOR

From COARSE

40 MESH

RIGHT Down the line

To FINE and SUPERFINE

STILL GOING UP!

Now 270 Sturtevant Air Separators in the Cement Industry . . . and many more in other major industries.

350 MESH

S is for STURTEVANT and its evident superiority in air separating equipment for any material and any mesh up to micron sizes.

Producers stand by STURTEVANT because this Air Separator gives positive control of particle size and surface area with maximum mill capacities, minimum temperatures and definite savings in production.

If you have a sizing problem, tell it to STURTEVANT . . . and get the right answer.

STURTEVANT MILL CO. HARRISON SQUARE **BOSTON, MASS.**

By W. E. TRAUFFER

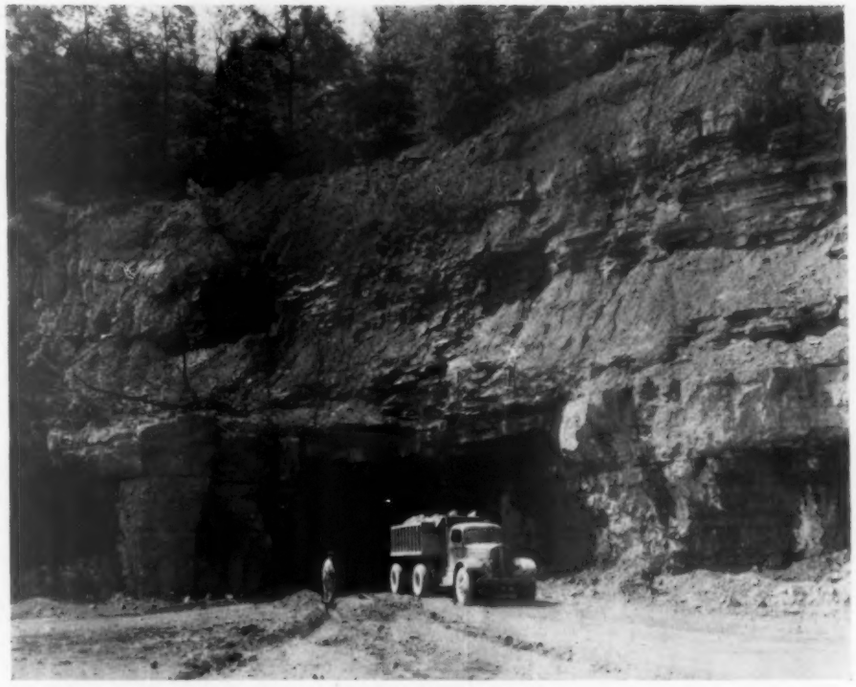
New System of Haulage, Direct Firing Are Installed by Medusa at Wampum

IT is less than two years since an article was published in these pages describing in some detail the plant of the Medusa Portland Cement Company at Wampum, Pennsylvania. A series of improvements over a period of years had kept up-to-date this pioneer among the cement plants west of the Lehigh Valley. Since then the locomotive-and-cableway haulage system was replaced by truck-trailers and direct-firing coal mills have replaced the old bin system. Only these improvements are described in this article and readers are referred to the October, 1938 issue of PIT AND QUARRY for earlier improvements.

The truck-haulage system is of unusual interest because a large part of the hauling is done underground. The stone used is obtained in about equal quantities by mining and open quarrying. The mine is one of the most extensive operations of its kind and has been developed with 30-foot square rooms and an 18-foot roof. Ventilation is very good. Formerly steam locomotives and cars were used to haul the stone to the mine opening and a ¾-mile long tramway hauled it to the plant.

This dual system was replaced in April 1939 by three truck-trailer units. Each of these consists of a 10-cubic yard Cleveland Truck Engineering Co. end-dump open-end trailer which hauls 14 tons of stone. The White truck tractors are powered by 82-hp. Hercules Diesel engines. Westinghouse air brakes are used and governors permit a maximum speed of 35 m.p.h. Gar Wood hydraulic hoists are used and the trailer bodies are a heavy-duty type with 2-in. oak planks between ¼-inch steel plates forming the bed. The two front wheels of the tractors and the dual rear wheels of the trailers are equipped with 10.50-by 20-inch tires and the dual traction wheels with 9.75-by 20-inch tires. The trailers have a small auxiliary wheel for use when detached from the tractors.

The haul from the present workings in the mine to the opening is about ¾ mile although it is usually up to 1.4 miles. The haul from the opening and from the quarry face to the crusher building at the plant is ½ mile. As equal quantities, about 440 tons, of each type of material are now required daily, two of the units are hauling from the mine and one from the quarry. The two inside trucks haul about 15 loads each and the outside one hauls about 35 loads in an 8-hour day. When operating two kilns the trucks work four or five days a week and when three kilns are operating they work six days weekly.



Loaded truck-trailer coming out of the mine of the Medusa Portland Cement Company at Wampum, Pennsylvania.

The trucks have each been driven about 15,000 miles in 14 months of operation. Each truck is driven about 45 miles daily and averages 4 miles per gallon on the 6-cent fuel oil used which is bought in car-load lots. The engines used are the controlled-combustion type and are safe to use underground wherever there is reasonably good ventilation.

All roadways in the mine, quarry and to the plant are kept in good condition at all times with screenings and calcium chloride. The entire haul is on the company's property, and the one highway (Pennsylvania Route No. 18), which separates the quarry and plant, is crossed over an old railway bridge.

According to A. F. Krebs, superintendent, the savings due to the new hauling system have reduced by one-half the total cost of the stone delivered at the plant. Formerly 4 to 5 shovels were required and tracks had to be

Air shovel loading truck-trailer in quarry.

Air shovel loading truck-trailer in mine.

Another Cement Company Purchases 9 Fuller Coolers

March of this year, four Fuller Air-Quenching Coolers were put into operation in a cement plant in Eastern Pennsylvania. So satisfactory is the performance of these coolers, that five additional coolers have been purchased, making a total of nine. When these additional units are installed, all of the kilns in the plant will be Fuller equipped.

Since the first installation of 4 Fuller Coolers proved successful, less than two years ago, 30 coolers have been sold. Ten of these were repeat orders, five each from two different companies. And, every installation has more than lived up to expectations, proving beyond a doubt that the Fuller Air-Quenching Cooler is everything claimed for it, a most efficient unit.

Initial cost is low, and, due to low speed and simple mechanical construction, records show maintenance and upkeep is also exceedingly low.

FEATURES OF FULLER AIR-QUENCHING COOLER

Abrupt chilling for production of clinker of high glass content

Fuel economy, due to excellent recuperation, with high and uniform combustion air temperatures

Patented controls available to maintain a pre-determined quantity of secondary combustion air, and to hold the secondary and primary air at desired preheat temperatures

Uniformly well burned clinker of increased weight

Mechanically simple; requires comparatively little maintenance

Grates are water cooled; fixed grates alternate with moving grates

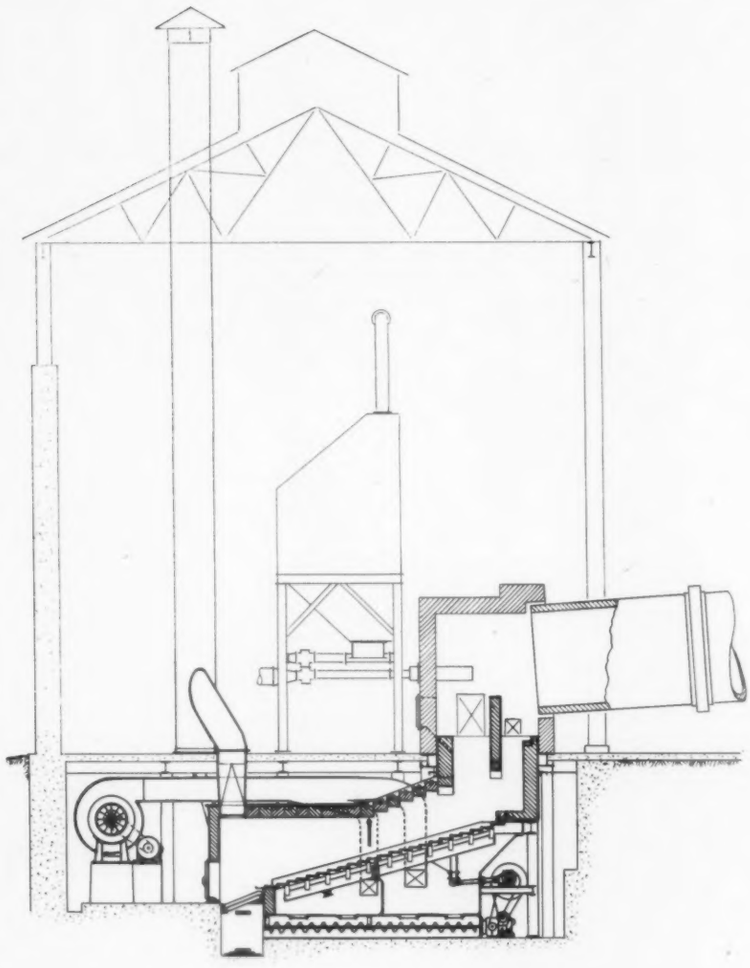
Operation under direct observation at all times

Drive mechanically simple, at low speed, outside of cooler

Low power requirements

Fuller Coolers are manufactured under the following patents:
2,031,047 — 2,032,135 — 2,041,142
2,095,446 — 2,137,158 — 2,163,513
and patents pending in the United States and principal foreign countries.

For complete details write for Bulletin CO-2.



FULLER COMPANY
CATASAUQUA, PENNSYLVANIA

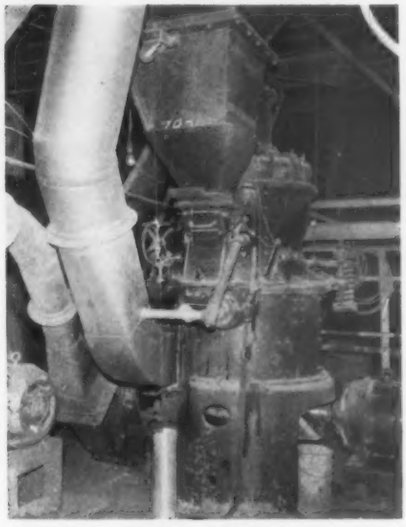
Chicago: 1118 Marquette Bldg. San Francisco: 320-321 Chancery Bldg.

CO-4

FULLER-KINYON, FLUXO, AND AIRVEYOR CONVEYING SYSTEMS · · · · ROTARY FEEDERS AND DISCHARGE GATES
ROTARY AIR COMPRESSORS AND VACUUM PUMPS · · · · AIR-QUENCHING COOLERS · · · · BIN SIGNALS

moved for each shot and whenever different grades of stone were required. Four locomotives and 380 mine cars were used to keep the tramway operating at its daily capacity of 1100 tons. Elimination of rehandling of the stone and labor savings were also important factors.

In the mine loading is done with two No. 18 Osgood ¾-cubic yard air shovels and a No. 29 Osgood 1¼-cubic yard air shovel is used in the quarry. Drilling in the mine is done with Gardner-Denver D89 drifter drills and Hercomite No. 3 and Du Pont Extra C explosives are used. A Gardner-Denver wagon drill is used in the quarry.

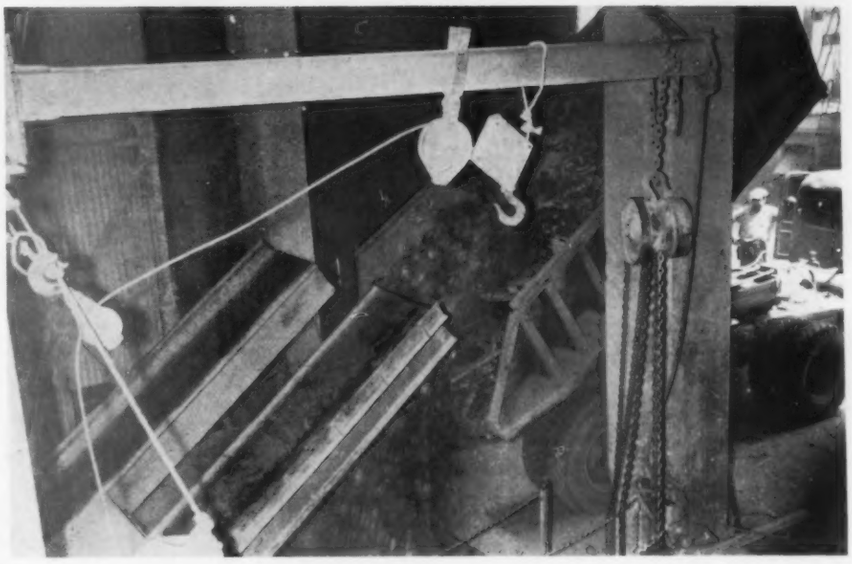


One of the four direct-firing bowl mills installed in this plant.

Part of the worked-out section of the mine has been leased out for mushroom growing on a large scale. There are now 5 acres of beds which produce about 1100 lb. of mushrooms daily.

At the plant the trucks are driven into the crusher building where an unusual drawbridge mechanism permits them to be driven over the top of the crusher before dumping. This eliminates the necessity for backing up to dump which has been one of the drawbacks to the use of end-dump trucks for this type of work. The bridge is a U-shaped steel frame pivoted at the bottom and raised and lowered by an air cylinder. As a truck approaches the bridge is lowered into place and is immediately raised after the truck has passed over it. The truck then dumps its load into the 42-inch Allis-Chalmers McCully primary crusher and the bridge is left up out of the way for dislodging rock and other work on the crusher. Using this system a truck enters the building. dumps its load and leaves in 35 seconds elapsed time. No changes of importance have been made in the plant from this point on to the kilns since the preceding article.

R. G. Talley, master mechanic and Frank Mielke, quarry foreman looking at some mushroom beds.



Suspension bridge raised after truck has passed over it to dump into crusher.

Early in May of this year Raymond direct-firing bowl mills were put in operation on the 4 out of 6 kilns in this plant which are being operated. These are the three 8- by 125-foot and the 10- by 8- by 125-foot kilns on which Vanderwerp recuperators were earlier installed. A new coal storage silo was installed and the coal crushing and handling equipment was rearranged.

Coal is now dumped from trucks into a hopper from which a pan conveyor feeds it to a Jeffrey roll crusher. The coal drops from the crusher on a pan conveyor feeding a steel-inclosed bucket elevator followed by a screw conveyor which can feed the coal either direct to the four 16-ton steel mill-feed bins or to the new concrete silo which is 30 feet in diameter and 24 feet high. Coal can be drawn as needed from this silo back into the mill-feed circuit.

The bowl mills are installed in the usual manner on the burner platform and drying air is drawn from the tops of the kiln hoods. A 5-foot diameter cyclone removes dust before this air goes into the mill at a temperature of about 200 degrees F. The collected dust is discharged to the Peck carrier which carries the clinker to storage. The coal mills have not been in operation long enough for definite information to be available but, according to Mr. Krebs, kiln capacity has been increased and fuel consumption per barrel decreased considerably. Recently General Electric radiation pyrometers were installed on two of the kilns to make possible even better control of burning.

New Uses Broaden Market for Lime

One of the newer uses for lime is its application to the treatment of cannery wastes, thus reducing stream pollution. Additions of 4 to 10 pounds of lime, supplemented by ferrous sulfate, for each 1,000 gallons of waste have been found effective.

Less important among other new uses from a tonnage standpoint, is the proposed employment of half-filled cans of quicklime behind library shelves to reduce humidity and prevent mildew during the summer months.

Interesting, too, is the contribution of lime to the manufacture of Nylon fibers which promise to be used extensively in general service fabrics.

Lime manufacturers, however, are becoming more and more interested in making masonry mortars and other advanced products in which lime is one of the major constituents as of greatest importance in expanding the use of the material.

When Enthusiasm for . . .

MANHATTAN HOSE

Multiplies Like this

Sand Blast Hose

Steam and Air Hose

Welding Hose

Steam, Water, Spray, Welding and Air Hose

ONE user's enthusiasm for MANHATTAN Hose might not mean much, but when approval comes on a wholesale basis from many users of many different types of MANHATTAN Hose over a wide range of industries, then the cumulative evidence of service, performance and long wear can be taken as a positive indication of economy.

Cut yourself in on this service of performance economy by ordering MANHATTAN Hose—today, if you can put it to work now—81 kinds for 81 types of service.

A mill supply dealer* in nearly every important city carries stock for ordinary requirements, and he is as near as your telephone.

Condor PRODUCTS

Conveyor and Elevator Belt	Hydraulic Hose	Launder Lining
Compensated Belt	Oil and Gasoline Hose	Industrial Brake Blocks and Lining
Transmission Belt	Sand Blast Hose	Molded Rubber Goods
V-Belt	Steam Hose	Rubber Lined Tanks
Air Hose	Suction Hose	Rubber Covered Rolls
Contractors Hose	Water Hose	Abrasive Wheels
Fire Hose	Chute Lining	Bowling Balls

*Phone him

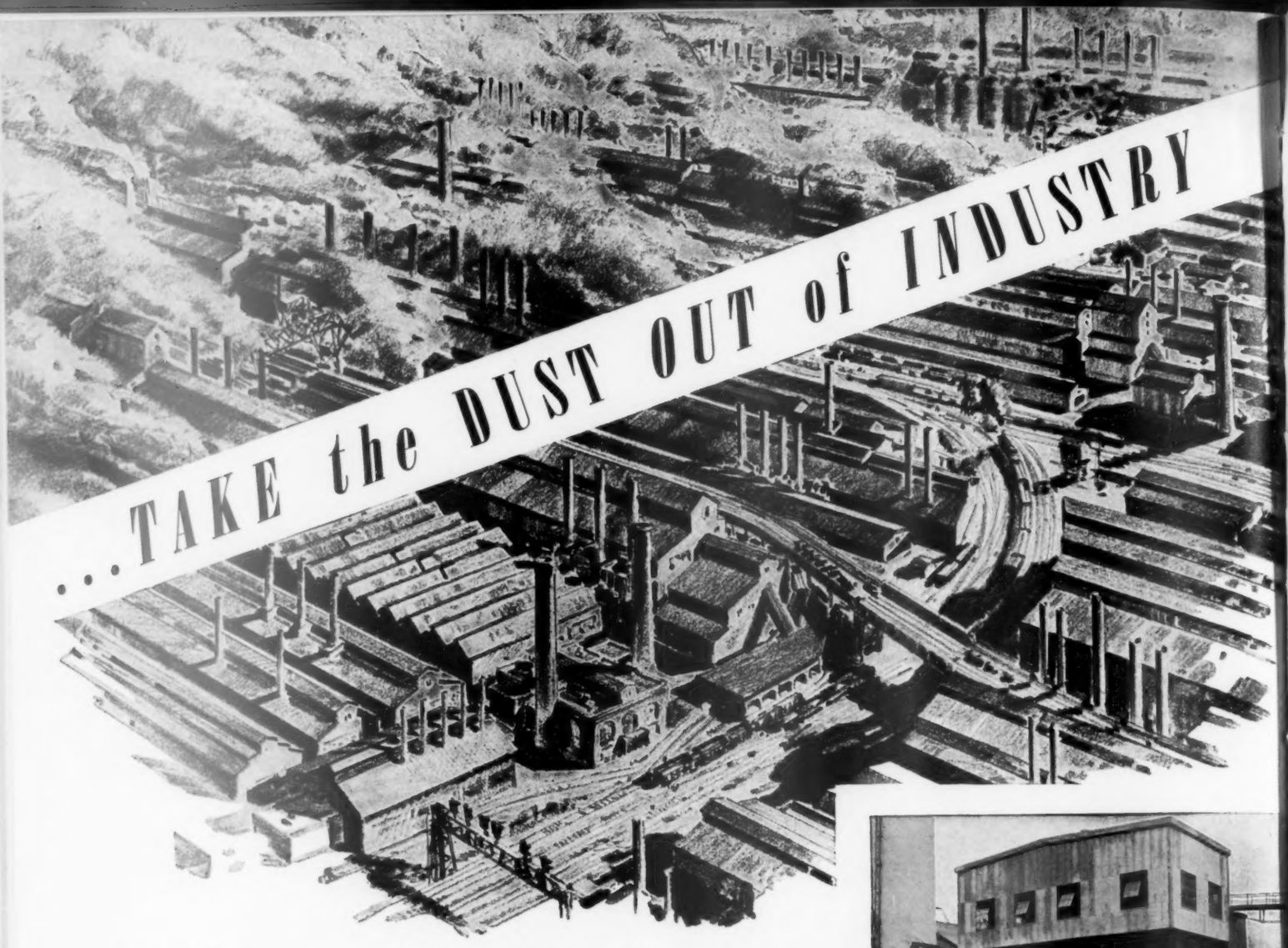
THE MANHATTAN RUBBER MFG. DIVISION
OF RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES AND FACTORIES
11 Townsend St., Passaic, N. J.

Officers, Superintendents, Engineers, Chemists and Other Executives of Portland-Cement Manufacturing Companies in the United States and Canada

(See company list, pages 59 and 62, for full company names and complete local addresses.)

Name	Title*	Company	Address
Ackerman James H ..	vp	Lawrence	150 Broadway New York N Y
Ackerman Marion S..	vp	Lawrence	
Ackerman Marion S jr	pl m	Lawrence	Siegfried Pa
Adams E R.....	chem	Allentown	Evansville Pa
Adams George.....	eng	Edison	New Village N J
Adams J Q.....	s-t	Bessemer	Youngstown O
Affelder W L.....	s	Green Bag Pa	Pittsburgh O
Aldeton E F.....	sup	North American	Berkeley W Va
Alexander J B	c chem	Southwestern	Osborn O
Alexander M Moss ..	p	Missouri	St Louis Mo
Alexander V J.....	s-t	Hermitage	Nashville Tenn
Alger Joseph jr	sup	Great Lakes	2500 Elm St Cleveland O
Allen D F.....	vp	Valley Forge	Catasauqua Pa
Andersen Peter	s	Northwestern States	Mason City Ia
Anderson F J.....	sup	Monolith Midwest	Laramie Wyo
Anderson L.....	s-t	Whitehall	Philadelphia Pa
Anderson Louis.....	c chem	Alpha	Easton Pa
Anderson R W.....	chem	Oregon	Oswego Ore
Andres C S.....	sup	Lone Star (N Y)	Hudson N Y
Ansorge William A..	as t	Medusa	Cleveland O
Asplundh E T.....	vp	Pittsburgh	Barberton O
Avnsoe T.....	vp	Lone Star	New York N Y
Ayres Warren W....	p	Lawrence	150 Broadway New York N Y
Bagley W G C.....	t	Northwestern	Mason City Ia
Bailey E W.....	sup	Canada	Lakefield Ont Can
Baker Daniel jr.....	vp	Standard Lime	Baltimore Md
Baker David B.....	vp pa	Standard Lime	Baltimore Md
Baker J H.....	p	Standard Lime	Baltimore Md
Baker Jos D jr.....	s-t	Standard Lime	Baltimore Md
Baker R D.....	p	Peerless	Royal Oak Mich
Baldus Charles.....	t	San Antonio	San Antonio Tex
Ballantyne G W.....	as s	Ideal	Denver Colo
Bancroft L E	s-t	California	Los Angeles Cal
Barnes Thomas II... .	vp as s-t	Keystone	Philadelphia Pa
Barnett E D.....	sup	Cowell	Cowell Cal
Barrackman A M	as-s as-t	Monarch	Humboldt Kan
Bass F L.....	chem	Keystone	Bath Pa
Baumberger C.....	p	San Antonio	San Antonio Tex
Baumberger C jr	vp	San Antonio	San Antonio Tex
Bayer L E.....	vp	National (Alabama)	Birmingham Ala
Bayle F L.....	c eng	Glens Falls	Glens Falls N Y
Baylor H D.....	p	Louisville Corp Louisville N Y	Speed Ind
	vp	Louisville Co	
	vp gm	Lehigh	
Bear Raymond D....	vp	Great Lakes	Allentown Pa
Bechtold R A.....	sup	Pennsylvania-Dixie	Valley Junction Ia
Beck A G.....	pl m	Canada	Montreal East Que Can
Beckett Garner A....	p	Riverside	Los Angeles Cal
Bedford-Jones A C..	s	National (Canada)	Montreal Que Can
Beeghly L A.....	p	Federal	City Bank Bldg Youngstown O
Bell G M.....	s-t	Spokane	Spokane Wash
Bennett J C.....	as sup pa	Hawkeye	Des Moines Ia
Bennett W M jr	as s as t	Pennsylvania-Dixie	Nazareth Pa
Berger E E.....	c chem	Kosmos	Kosmosdale Ky
Beverstock Burt H ...	vp s des	Standard	Builders' Exchange Bldg Cleveland O
Bevier A T.....	sup	Great Lakes	Buffalo N Y
Binford O J.....	gm	West Penn	Butler Pa
Binford R J.....	c eng	West Penn	West Winfield Pa
Bischoff Paul.....	chem	Aetna	Bay City Mich
Blackmore G C.....	chem	Northwestern States	Mason City Ia
Bliss W E.....	vp	Federal	City Bank Bldg Youngstown O
Block George M.....	vp	Missouri	St. Louis Mo
Blum Eugene.....	p	Coplay	521 Fifth Av New York N Y
Bobbitt Bailey M	tr	Great Lakes	Buffalo N Y
Boberg P J.....	c chem	Lone Star (La)	New Orleans La
Boettcher Charles....	p	Arkansas Colorado Ideal Oklahoma United States Nebraska	Denver Colo
	p tr	Three Forks Union	Denver Colo
Boettcher C K.....	vp tr	Arkansas Colorado Ideal Oklahoma Nebraska	Denver Colo
	vp	Three Forks Union	Denver Colo
Boland Fred.....	as sup	Petoskey	Petoskey Mich
Bollinger E F.....	chem	Pacific	Redwood City Cal
Bolster Marshall G...	vp	Aetna	50 Congress St Boston Mass
Bolster Stanley M....	s-t	Aetna	
Bowen John C.....	vp	Lehigh	Allentown Pa
Bowman C E.....	as s-t	Lehigh	Allentown Pa
Boyne E L.....	sup	Alpha	Jamesville N Y
Brader V P.....	pa	Keystone	Philadelphia Pa
Brandenburg H R....	chem	Cowell	Cowell Cal
Brandt R L.....	pa	Northwestern	Seattle Wash
Breerwood C H.....	vp	Allentown	Catasauqua Pa
Breinig W S sr.....	as sup	Hercules	Nazareth Pa
Bresee M H.....	sec	Cowell	San Francisco Cal
Brewer H M.....	chem	Spokane	Irvin Wash
Bright R H.....	comp	Lehigh	Allentown Pa
Brobston Joseph.....	ch bd	Hercules	Philadelphia Pa
Brodt George E.....	pa	Nazareth	Nazareth Pa
Brooks J P.....	sup	Superior	Concrete Wash
Brotzman I C.....	sup	Lone Star (Ala)	Birmingham Ala
Browder D S.....	traf m	Pennsylvania-Dixie	New York N Y
Brown A C.....	pl m	Kosmos	Kosmosdale Ky
Brown Arch.....	sup	Alpha	Cementon N Y
Brown G D.....	sup	Florida	Hooker's Pt Fla
Brown G S.....	ch bd	Alpha	Easton Pa
Brown Howard B	s	Pittsburgh	Pittsburgh Pa
Brown W L.....	s	Wolverine	Coldwater Mich
Browne H A.....	sup	Wyandotte	Wyandotte Mich
Brownstead F C.....	sup	Alpha	Ironton O
Bruff A C.....	vp	Edison	250 Stuart St Boston Mass
Bryant L N	re eng	Green Bag (Pa)	Pittsburgh Pa
Buchanan E M.....	chem	Superior	Concrete Wash
Buckbee J C.....	vp	Petoskey	Los Angeles Cal
Burkett A D.....	chem	Three Forks	Trident Mont
Burnett Coy.....	ch bd p	Monolith Monolith Midwest	Los Angeles
Burnett C P jr.....	vp	Pacific Coast	Seattle Wash
Burnett W D.....	vp	Monolith	Los Angeles Cal
Butchart R P.....	p	British Columbia	Tod Inlet B C Can
Butler C M.....	c eng	Marquette	La Salle Ill
Cabaniss W M.....	sup	Signal Mountain	Chattanooga Tenn
Caldwell L Hardwick.	vp	Signal Mountain	Chattanooga Tenn
Calkins J J.....	s-t	Monolith	Los Angeles Cal
Calloway E E	sup	Volunteer	Knoxville Tenn
Calvin Ben W.....	p gm	Aetna	Bay City Mich
Cameron George T..	p	Santa Cruz	San Francisco Cal
Cameron W P.....	ch Amer bd	Olympic	Seattle Wash
Campbell J W.....	sup	North American	Howe's Cave N Y
Campbell R L.....	ch chem	Lone Star Ala	Spocari Ala
Canvin A H.....	s	Pacific	San Francisco Cal
Capen L J.....	vp	Dewey	Box 685 Davenport Ia
Caress J E.....	pa	Southwestern	El Paso Tex
Carlson J E.....	saf m	Universal Atlas	New York N Y
Carman C M.....	sup	Universal Atlas	Independence Kan
Caron C E.....	g sup	Trinity	Dallas Tex
Carstens F W.....	pa	Manitowoc Medusa	Cleveland O
Carter C G.....	chem	Canada	Hull Que Can
Carter Robert C	s-t	Glens Falls	Glens Falls N Y
Catterlin W B.....	tr	National (Alabama)	Birmingham Ala
Chamberlain P R	g sup	Dewey	Dewey Okla
Champion E C.....	sup	Lone Star (Pa)	Nazareth Pa
Chandler W R	c chem	Idaho	Inkom Ida
Chapman Matt J	pa	Bessemer	Youngstown O
Charles Homer.....	c eng	South Dakota	Rapid City S D
Chubb J H.....	m ser dep	Pennsylvania-Dixie	New York N Y
Clancy E M.....	s	Kosmos	Louisville Ky
Cleary W H.....	pro eng	Southwestern	Los Angeles Cal
Clem C A.....	chem	Signal Mountain	Chattanooga Tenn
Coffman Herbert	re eng	Hercules	Philadelphia Pa
Colburn D S.....	vp	Marquette	Chicago, Ill
Colburn N D.....	div sup	Alpha	Easton Pa
Cole George W.....	g traf m	Medusa	Cleveland O
Cole J S.....	sup	Trinity	Box 152 Houston Tex
Collier James A	sup	Louisville (N Y)	Brixmont N Y
Collins Ben R.....	s-t pa	Longhorn	San Antonio Tex
Colman J H.....	vp	Hawkeye	First Natl. Soo Line Bldg Minneapolis Minn
Colton J H.....	vp	Pacific	San Francisco Cal
Compton F H.....	g sup	Allentown	Catasauqua Pa
Conn Charles F.....	p	Giant	Philadelphia Pa
Conner Hugh	chem	Trinity	Fort Worth, Tex
Coogan F M.....	vp	Alpha	Easton Pa
Cooley H S.....	c chem	Washington-Idaho	Orofino Ida
Cooper D P.....	vp	Lone Star (N Y)	Albany N Y
Corzelina F M.....	vp	Gulf	Box 3046 Houston Tex
Coulson D C.....	sup	Nebraska	Superior Neb
Couse W R.....	as s-t	Yosemite	Merced Cal

*as assistant, **c** chief, **ch bd** chairman of board, **chem** chemist, **com** committee, **comp** comptroller, **dep** department, **dir** director, **div** division, **el** electrical, **eng** engineer, **fld** field **g** general, **gm** general manager, **m** manager or managing, **mas mec** master mechanic, **off** office, **op** operating, **p** president, **pa** purchasing agent, **pl** plant, **pro** production, **re** research, **s** secretary, **saf** safety, **ser** service, **sup** superintendent, **t** treasurer, **tec** technical, **tes** tests, **traf** traffic, **val** valuation, **vp** vice-president, **wks** works.



• Four classifications cover the entire range of dust collection and gas cleaning:

1. Collecting waste material from waste gas —fly ash.
2. Collecting waste material from valuable gas—blast furnace gas.
3. Collecting valuable material from waste gas—smelter fume.
4. Collecting valuable material from valuable gas—manufactured gas.

• The Cottrell Process of Electrical Precipitation is the only method that is applicable to all four classifications with equal success and efficiency in each.

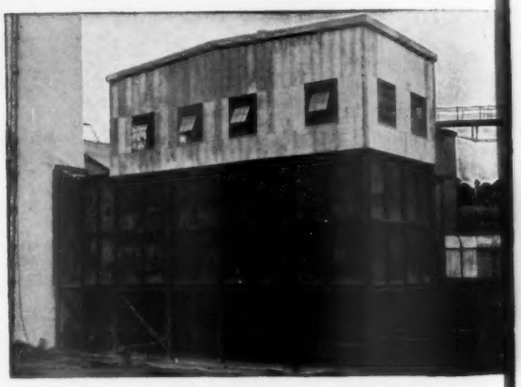
• Each classification covers a wide range of industries, but Cottrells perform as economically in each industry as in each classification.

• What other equipment can clean red hot gas? or operate in a vacuum? or take water out of blast furnace gas?

• *Cottrells do everything that any other type of collector can do—at a lower cost, and do many things that no other type can do—at any cost.*

• This fact should leave no doubt in your mind as to your preference for a Cottrell. Considered from every viewpoint—initial cost—collecting efficiency—power cost—draft loss—maintenance expense—attendance—capacity—versatility—obsolescence—life: the leadership of Cottrells is convincingly demonstrated in more than 3000 successful installations in 31 countries.

• Appraise your plant. Are you losing the good will of your community or damaging your equipment and product by air-pollution? Are you wasting recoverable values? In either case—(no operating industry is dust-free) we offer our comprehensive experience and exhaustive research facilities for your use.



COTTRELLS IN THE CEMENT INDUSTRY

The principal advantage resulting from the use of Cottrells in cement plants is the elimination of the heavy dispersion of dust over the surrounding area. In many cases, however, most of the recovered dust is returned to the kilns. The dust being collected by all the Cottrells now being operated in cement plants amounts to many thousands of tons a day.

WESTERN PRECIPITATION CORPORATION
1016 W. NINTH ST., LOS ANGELES, CALIFORNIA • CHRYSLER BLDG., NEW YORK
PRECIPITATION COMPANY OF CANADA, LTD.
DOMINION SQUARE BUILDING, MONTREAL, QUEBEC

Write for a copy of this new Booklet containing a history of the Cottrell Process and performance facts in the major industries of the world.

COTTRELL

ELECTRICAL PRECIPITATORS

TAKE THE DUST *OUT OF INDUSTRY*

Officers, Superintendents, Engineers, Chemists and Other Executives of Portland-Cement Manufacturing Companies in the United States and Canada—Continued

(See company list, pages 59 and 62, for full company names and complete local addresses.)

Name	Title*	Company	Address
Cowden B.....	s-t	Southern States	Rockmart Ga
Cowell I M.....	vp	Cowell	San Francisco Cal
Cowell S H.....	p	Cowell	San Francisco Cal
Cowham R N	vp	Trinity	Dallas Tex
Cox W R.....	as t	Lone Star (Va)	Norfolk Va
Coy Dave.....	s	San Antonio	San Antonio Tex
Craig B J.....	s as t	Ford	Dearborn Mich
Crapo W W.....	s	Huron	Detroit Mich
Cressman J O.....	sup	Whitehall	Cementon Pa
Creveling Louis.....	c chem	Standard	Painesville O
Cribari S L.....	as t	Marquette	Chicago Ill
Crocker F W.....	c eng	Permanente	San Jose Cal
Crofoot L F.....	p	Hawkeye	Omaha Natl Bank Bldg Omaha Neb
Cronkrite A C.....	vp	Universal Atlas	New York N Y
Cross W N.....	sup	Green Bag (W Va)	Lawton W Va
Currie H R.....	s	Wabash	Detroit Mich.
Currier F W.....	t	Pittsburgh	Pittsburgh Pa
Curtis J E.....	g sup	Consolidated Florida Signal Mountain Trinity	Chicago Ill
Dalchow John.....	sup	Wolverine	Coldwater Mich
Daniels R E.....	sec	Federal	Buffalo N Y
Dannelly J M jr.....	vp	National (Alabama)	Birmingham Ala
Davis D A.....	eng	Northwestern	Mason City Ia
Davis E H.....	p	Superior	150 E Broad St Columbus O
Davis G E.....	m ser dep	Marquette	Box 102 Hudson Wis
Davis Harry P.....	g sup	Permanente	San Jose Cal
Davis Howell J.....	vp	Volunteer	Knoxville Tenn
Davis P J.....	as s	Whitehall	Philadelphia Pa
Davis W A.....	p	Standard	Builders Exchange Bldg Cleveland O
Davis William A.....	vp	Standard	Painesville O
Davison George S...	ch bd	Green Bag (W Va)	Pittsburgh Pa
Dawson Philip G.....	vp t	Medusa	Cleveland O
Deadman W W.....	sup	Lone Star (Kan)	Bonner Springs Kan
De Bruin N M.....	sup	Lone Star (Ala)	Spocari Ala
De Jonckheers A P...	sup	Yosemite	Merced Cal
Dennis J W.....	chem	Consolidated	Fredonia Kan
De Pont H B.....	chem	Manitowoc	Manitowoc Wis
Devens Alex.....	sup	Aetna	Bay City Mich
De Wolfe H.....	eng	Medusa	Silica O
Dickinson W W	vp	Marquette	Chicago Ill
Dieterman Henri.....	c eng	Aetna	Bay City Mich
Dignan G E.....	c eng	Green Bag (Pa)	Neville Island Pa
Dillon John R.....	vp	Lone Star	New York N Y
Dilts I J.....	sup	Colorado	Boettcher Colo
Dittmar R A.....	sup	Universal	Hudson N Y
Dittmar W J.....	sup	Edison	New Village N J
Dodge Lee.....	chem	Lone Star (Va)	Norfolk Va
Donaghy G J.....	as s	Lone Star	New York N Y
Donaldson William ..	as comp	Riverside	Los Angeles Cal
Dorland R R.....	sup	Union	Devil's Slide U
Douglas Tom B.....	s pa	Gulf	Houston Tex
Douglass A E.....	p vp	Allentown Valley Forge	Catasauqua Pa
Downs J Stanley.....	sup	Hercules	Nazareth Pa
Dowrie J R.....	sup	Canada	Montreal East Que Can
Dreisbach E E.....	ch chem	Standard Lime	Martinsburg W Va
Duff C C.....	as t	Lone Star (Tex)	Dallas Tex
Duncan Stuart.....	ch bd	Marquette	La Salle Ill
Duque E E.....	vp gm	California	Los Angeles Cal
Durbin H R	c chem	Lone Star	New York N Y
Durfee E R.....	as s	Monolith	Los Angeles Cal
Duvall S L.....	g sup	Superior	Portsmouth O
Eckert H H	vp t	Edison	West Orange N J
Edison Charles	p	Edison	West Orange N J
Edmonds C W.....	sup	Canada	Fort White Man Can
Eichenlaub A C.....	chem	Peerless	Detroit Mich
Eisenhard L A.....	c chem	Lawrence	Siegfried Pa
Elcock W B.....	vp gm	Southern States	Rockmart Ga
Elliott G H.....	vp	Whitehall	Philadelphia Pa
Elliott I S.....	sup	Pacific	Plaster City Cal
Enloe Eugene.....	p	Idaho	713 Sprague Av Spokane Wash
Enloe Raymond.....	s-t	Idaho	
Ennis D A.....	el eng	Glens Falls	Glens Falls N Y
Erdman C.....	sup	Lone Star (Ind)	Limedale Ind
Erdman R O.....	pa	Lehigh	Allentown Pa
Ernst E S.....	chem	Dewey	Davenport Ia
Ernst William	c chem	South Dakota	Rapid City S D
Erwin F C.....	s	Edison	West Orange N J
Evans E Earl.....	s-t	Volunteer	Knoxville Tenn
Evans J C.....	c chem	Nazareth	Nazareth Pa
Fair William A.....	s-t	Monarch	Hutchinson Kan
Fairchild J A.....	c chem	Lone Star (Kan)	Bonner Springs Kan
Fairman J R.....	as to vp	Pennsylvania-Dixie	New York N Y
Farmer H G.....	tec ser dir	Universal Atlas	New York N Y
Fehnel S J.....	as t	Nazareth	Nazareth Pa
Fellows C A.....	vp	Southwestern	Los Angeles Cal
Ferguson L R.....	vp	Lone Star (Tex)	Dallas, Tex
Ferrell K P.....	tec ser m	Dewey	Davenport Ia
Fischer J P.....	chem	Cumberland	Cowan Tenn
Flately A F.....	as t	Lone Star (N Y)	Albany N Y
Fleming J E.....	chem	Canada	Belleville Ont Can
Fleming M F.....	sup	Colorado	Portland Colo
Flowers A E.....	sup	Trinity	Fort Worth Tex
Fontaine C E.....	vp	Lone Star (Ala)	Birmingham Ala
Ford A E.....	c chem	Green Bag (WVa)	Huntington W Va
Ford Edsel B.....	p t	Ford	Dearborn Mich
Ford E L.....	vp	Huron	Detroit, Mich
Ford J B.....	pres	Huron	Detroit Mich
Ford M.....	vp	Huron	Detroit Mich
Foster A R.....	pa	California	Los Angeles Cal
Fowden William.....	pa pl m	South Dakota	Rapid City S D
Fowler C B.....	chem	Medusa	Dixon Ill
Fox J J.....	c chem	Missouri	Box 517 Independence Mo
Franks F B.....	vp m	National	Brodhead Pa
Frei Otto C.....	vp	Washington-Idaho	Orofino Ida
Frolich A K.....	sup	Ash Grove	Louisville Neb
Frost R B.....	as sup	Lone Star (Ind)	Greencastle Ind
Frudden E C.....	vp	Northwestern States	Dubuque Ia
Fuchs Karl.....	eng	Medusa	Bay Bridge O
Funch E E.....	as c eng	Lone Star	New York N Y
Funderburg L M.....	sup	Universal Atlas	Leeds Ala
Falster John L A.....	p tr	Petoskey	Petoskey Mich
Gano W P.....	div sup	Pennsylvania-Dixie	Bath Pa
Ganser J W.....	sup	Trinity	Eagle Ford Tex
Gardiner William T..	ch of bd	Pacific Coast	Boston Mass
Gardner Frank.....	as sup	South Dakota	Rapid City S D
Gardner G O.....	sup	Ash Grove	Chanute Kan
Garrison M A.....	sup	Monolith	Monolith Cal
Gaskill Palmer D	vp	Whitehall	Philadelphia Pa
Gasper D A.....	sup	Canada	Hull Que Can
Gath Carl W.....	s-t	Northwestern	Seattle Wash
Gay George R.....	vp gm	Santa Cruz	San Francisco Cal
Genger C F.....	pa	Federal	Buffalo N Y
George A N.....	pa	Cowell	San Francisco Cal
Gerstell Robert S....	s	Alpha	Easton Pa
Geyer N V.....	sup	Pennsylvania-Dixie	Kingsport Tenn
Gilchrist C.....	chem	Beaver	Gold Hill Ore
Gray Walter.....	vp	Dewey	Kansas City Mo
Graybill Harvey.....	eng	Kosmos	Kosmosdale Ky
Green J H.....	pa	Consolidate Florida Trinity	Chicago Ill
Gretencort S A.....	sup	Three Forks	Hanover Mont
Grimes J E.....	sup	Hermitage	Nashville Tenn
Grimsley C R	as sup	Pittsburgh	East Fultonham O
Gring Claude E	pa	Riverside	Los Angeles Cal
Grogg R I.....	sup	Marquette	Union Planters Natl Bank Bldg Memphis Tenn
Grunewald Max E...	s-t	Copley	Copley Pa
Guenther Felix jr	c eng	Pennsylvania-Dixie	Nazareth Pa
GundersonRaymondT.	s	Trinity	Kenyon Minn
Guth E S.....	gm	North American	Hagerstown Md
Guth Evan B.....	c chem	National Portland	Bethlehem Pa
Guy F E	traf m	Universal Atlas	New York N Y
Haehnlen W L.....	vp	Giant	Philadelphia Pa
Haffner T N	sup	Keystone	Bath Pa
Hailey O L.....	c chem	Lone Star (Tex)	Dallas Tex
Hall Glenn	sup	Wabash	Osborn O
Halstead O C.....	sup	Southwestern	Victorville Cal
Hamilton R L.....	pa	Alpha	Chicago Ill
Hamilton V C.....	sup	Canada	Exshaw Alta Can
Hampton E L.....	vp	Cumberland	Nashville Tenn
Hanahan J Rose.....	p	Volunteer	Charleston S C
Hanks Howard.....	ch eng	Alpha	Easton Pa
Hanley D S.....	vp	Pacific Coast	Seattle Wash
Hanley V J.....	s as t	Marquette	Chicago Ill
Hanna W C.....	chem	California	Colton Cal
Hanson C A.....	pa as s	Northwestern States	Mason City Ia
Harbaugh W M.....	c eng	Lehigh	Allentown Pa
Hardy C E.....	sup	Pennsylvania-Dixie	Bath Pa
Harris A D.....	pa	Wyandotte	Wyandotte Mich
Harris C P.....	sup	Huron	Alpena Mich
Harris E A.....	pa	Aetna	Bay City Mich

*as assistant, c chief, ch bd chairman of board, chem chemist, com committee, comp comptroller, dep department, dir director, div division, el electrical, eng engineer, fld field, g general, gm general manager, m manager or managing, mas mec master mechanic, off office, op operating, p president, pa purchasing agent, pl plant, pro production, re research, s secretary, saf safety, ser service, sup superintendent, t treasurer, tec technical, tes tests, traf traffic, val valuation, vp vice-president, wks works.

A ONE-YEAR SERVICE REPORT ON

Semi-Trailer Haulage

492,379* tons of rock hauled at CONSIDERABLE saving over former cost

*Total hauled for both cement and commercial stone production.

AT DEWEY PORTLAND CEMENT COMPANY'S DAVENPORT PLANT WITH 3 EASTON SEMI'S

One of three Easton TR-10 Semi-Trailers installed a year ago at the Davenport, Iowa, plant of the Dewey Portland Cement Company.

ONE YEAR AGO the Davenport, Iowa, plant of the Dewey Portland Cement Company modernized quarry haulage by installing three Easton Semi-Trailers. These big Easton Semi's cover a half-mile round trip haul, dumping one in every three and one-half minutes. The haul for one year's service was 492,379 tons of rock, for both cement and commercial stone production.

This progressive Dewey plant was aiming for bigger payloads, faster haulage, lower costs and trouble-free service. They wanted equipment which would pay for itself quickly. They are now satisfied on every count, and report no time out except for routine lubrication and service.

Easton Semi-Trailers have made possible the application of lighter, low-cost truck units to heavy-duty quarry service, thus paving the way to many practical economies. Flexibility of route, increased shovel output, and shock-proof dumping are other proved advantages of Easton Semi-Trailer Haulage.

You are invited to consult the Easton Engineering Service for information on designs and capacities to suit your individual requirements. Shipment of TR-10 semi-trailers (as shown above) can be made from stock. Back of every Easton product is the engineering experience gained through twenty-five years service to the quarry industry.

EASTON CAR & CONSTRUCTION COMPANY, EASTON, PA.

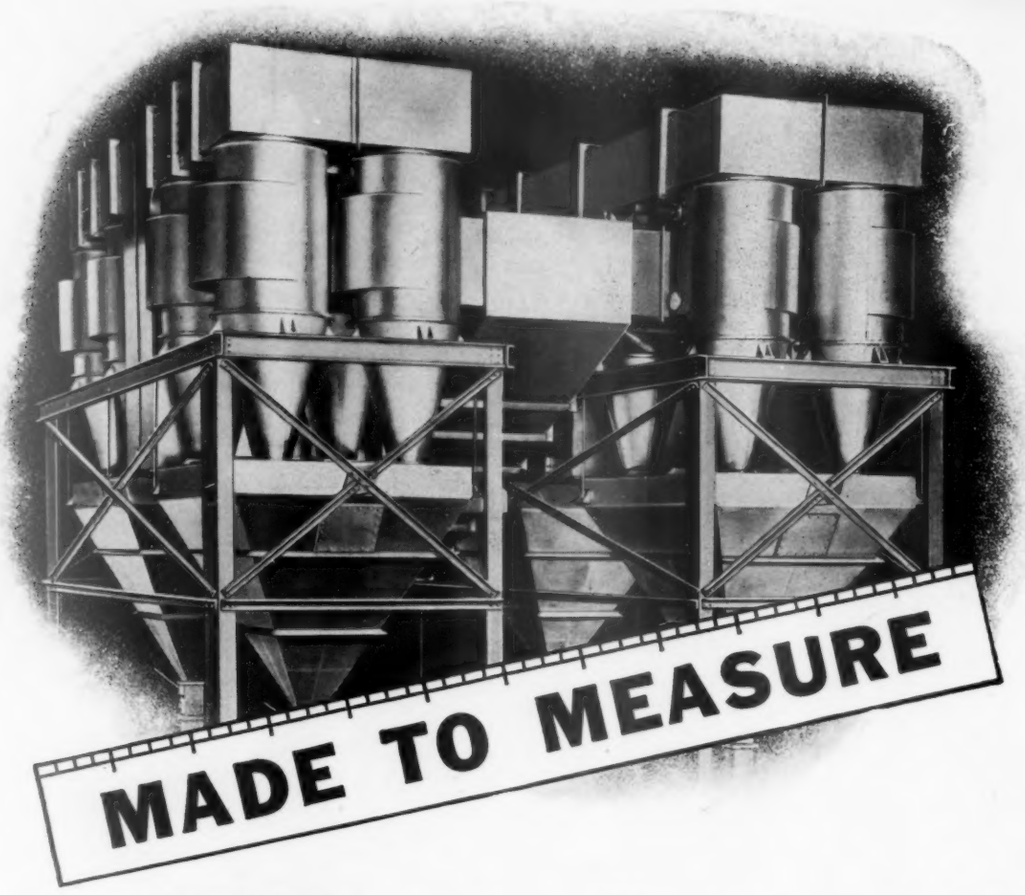
ALL TYPES OF CARS, TRUCK BODIES AND TRAILERS FOR ROCK HANDLING

Officers, Superintendents, Engineers, Chemists and Other Executives of Portland-Cement Manufacturing Companies in the United States and Canada—Continued

(See company list, pages 59 and 62, for full company names and complete local addresses.)

Name	Title*	Company	Address
Hart O C	chem	Monolith	Monolith Cal
Harte Thomas J	vp	North American	285 Madison Ave New York N Y
Hartsock R K	sup	Louisville Co	Louisville Ky
Hartwell Warren	c chem	Vulcanite	Phillipsburg N J
Harwood A T	chem	Florida	Hooker's Point Fla
Hasse O C	chem	Monarch	Humboldt Kan
Haubert Earl P	comp pa	Lawrence	150 Broadway New York N Y
Hausman H F	as vp as gm	Lehigh	Allentown Pa
Havard O D	g sup	Giant	Egypt Pa
Hawley E A	ch eng	Hawkeye	Des Moines Ia
Hayden J F	vp	Trinity	Dallas Tex
Heard Marion	chem	Calaveras	San Andreas Cal
Heck W P	chem	Valley Forge	West Conshohocken Pa
Heintzelman J H	c chem	Lone Star (Pa)	Nazareth Pa
Heleniak H M	vp	Spokane	Spokane Wash
Henderson R R	mas mec	Yosemite	Merced Cal
Henne E W	as tr	Missouri	St Louis Mo
Henry L S	tr	Giant	Philadelphia Pa
Henshaw Griffith	vp	Riverside	200 Bush St San Francisco Cal
Henshaw Stanley T	vp	Riverside	Los Angeles Cal
Henshaw Thomas D	as s as t	Riverside	200 Bush St. San Francisco
Herbert F H	as s-t	Santa Cruz	San Francisco Cal
Herbert Thomas L jr	vp	Hermitage	Nashville Tenn
Herrod R F	pa	Pacific	San Francisco Cal
Hicks T A	chem	Universal Atlas	New York N Y
Higgins W G	pa	Santa Cruz	San Francisco Cal
Hildebrand W	vp gm	Edison	New York N Y
Hill E D	p	Louisville Co / Louisville N Y / Louisville Corp	Louisville Ky
Hillman J H jr	p	Green Bag Pa	Pittsburgh Pa
Hines G J	as s	Cumberland	Cowan Tenn
Hinson H G	as s as t	Bessemer	Youngstown O
Hjerpe A E	vp	Consolidated	Chicago Ill
Hoey M A	pa	Canada	Montreal Que Can
Hoffman R E	sup	Universal Atlas	Hannibal Mo
Hogan Charles E	p	Lone Star	New York N Y
Hogue F H	t	Kosmos	Louisville Ky
Hohle Joseph L	sup	Coplay	Coplay Pa
Hoke Arnold	vp	Whitehall	Cementon Pa
Hollister C T W	p	Northwestern	Seattle Wash
Holmes T K	vp	Calaveras	San Francisco Cal
Hooton A W	chem	Superior Portland	Concrete Wash
Horn George P	c chem	Longhorn	Longhorn Tex
Horner A W	vp	Kosmos	Louisville Ky
Horner B R	eng	Medusa	Crescentdale Pa
Horner Charles	p gm	Kosmos	Louisville Ky
Hornung J J	as t	Lehigh	111 W Washington St Chicago Ill
Hoskins J P	s-t	Signal Mountain	Chattanooga Tenn
Hubbard H G	sup	Idaho	Inkom Ida
Huey R S	sup	Universal Atlas	Morgan Park Minn
Hummel R A	vp	Lone Star	New York N Y
Humphrey William A.	ch bd	Pacific Portland	San Francisco Cal
Humphries A K	vp	Permanente	Wells Fargo Bldg San Francisco Cal
Hunt Fred B	pl m	Dewey	Davenport Ia
Hupmann William	pa	Southwestern	Osborn O
Hynes R B	pa	Universal Atlas	New York N Y
Ingley A H	s-t	Standard	Painesville O
Jackson Charles R	c chem	Arkansas	Denver Colo
James Harry L	pa	Permanente	San Jose Cal
Jarrett G M	sup	Medusa	Silica O
Jennings H F	p t	Wabash	Detroit Mich
Jiggens F J	t	Giant	Philadelphia Pa
John George W	vp	Petoskey	Petoskey Mich
John J B	ch bd p	Medusa	Cleveland O
Johnson Carl D	ch com	South Dakota	Rapid City S D
Johnson J D	p gm / p	Canada / National (Canada)	Montreal Que Can
Johnson Norman	sup	St Mary's	St Mary's Ont Can
Johnston William J	c chem	Coplay	Coplay Pa
Jones C C	p	Wolverine	Coldwater Mich
Jones R C	as s as t	Hermitage	Nashville Tenn
Jordan Guy	chem	Southern States	Rockmart Ga
Jursits F J	as t	Lone Star (Kan)	Kansas City Mo
Kaiser Henry J	p	Permanente	Oakland Cal
Kaiser Henry J jr	s	Permanente	San Jose Cal
Kaiser W L	wks m	Peerless	Detroit Mich
Kanangeiser F R jr	pa	Superior	Portsmouth O
Kaufman J L	sup	Arkansas	Okay Ark
Keeping W H	as s	Missouri	St. Louis Mo
Keller W S	c chem	Trinity	Box 152 Houston Tex
Kelly G A	chem	Marquette	La Salle Ill
Kempster J H	sup	Universal Atlas	Buffington Lake Ind
Kennedy A M	wks m	Green Bag Pa	Neville Island Pa
Kennedy J W	eng	Huron	Detroit Mich
Kerby H E	pa	Lone Star	New York N Y
Kettle L	as s as t	Ash Grove	Kansas City Mo
Kickline H F	c chem	North American	Catskill N Y
Kiester H T	pa	Southwestern	Los Angeles Cal
Kilbourn F B	vp as gm / vp	Canada / National (Canada)	Montreal Que Can
Kilgore A L	c chem	Lone Star (Ala)	Birmingham Ala
Kilian George	s-t	Pennsylvania-Dixie	New York N Y
King George R	s	Great Lakes	Buffalo N Y
King I E	sup	Blue Diamond	Blue Diamond Nev
Kinginger W W	vp	Diamond	Middle Branch O
Kinzie R A	c eng	Santa Cruz	San Francisco Cal
Kirkpatrick J W	as t	Green Bag Pa	Pittsburgh Pa
Kirp George L	as sup	Petoskey	Petoskey Mich
Kistler W W	chem	Nebraska	Superior Neb
Klein William H	vp gm	Pennsylvania-Dixie	Nazareth Pa
Knappenberger H L	vp gm	Oregon	Portland Ore
Knickerbocker G C	chem	Wabash	Osborn O
Knode Ralph H	vp	Whitehall	Philadelphia Pa
Koch Charles E	chem	Medusa	York Pa
Koch D E	c chem	Giant	Egypt Pa
Koch H C	vp	Lone Star	New York N Y
Koffman M A	s-t	Southwestern	Los Angeles Cal
Kohn Isidore	vp	Hercules	Philadelphia Pa
Krabbe A F	sup	Olympic	Bellingham Wash
Kraft T W jr	eng	Kosmos	Kosmosdale Ky
Krarup Helmuth	sup	Hawkeye	Des Moines Ia
Krebs A F	sup	Medusa	Crescentdale Pa
Kritzer George	chem	Medusa	Newaygo Mich
Lambert W B	s	British Columbia	Victoria B C Can
Lang A G	sup eng	Pacific	Redwood City Cal
Languth Frank	eng	Santa Cruz	Davenport Cal
Larkin H J	as vp as gm	National Portland	Bethlehem Pa
Larmour H McC	chem	Yosemite	Merced Cal
Larsen Orla	g sup	National Portland	Philadelphia Pa
Larsson A G	c chem eng	St Mary's	St. Mary's Ont Can
Lasher W L	sup	Green Bag WVa	Kenova W Va
Latimer B J	sup	Three Forks	Trident Mont
Laude C L	pa	Huron	Detroit Mich
Lawler L F	sm	Peerless	Detroit Mich
Lawniczak G A	sup	Alpha	La Salle Ill
Lawson John sr	p	Trinity	111 W Monroe St Chicago Ill
Leach Wallace	c chem	Louisville Co	Speed Ind
Leake W P	sup	Louisville Co	Milltown Ind
Leche D H	pa g sup	Oregon	Portland Ore
Legale J H	sup	Canada	Belleville Ont Can
Legg A E	sup	Pennsylvania-Dixie	Richard City Tenn
Leh H H	gm	Keystone	Bath Pa
Lehaney J A	vp	Lone Star (Kan)	Kansas City Mo
Leichel Paul	sup	North American	Security Md
Leikhim J H	as t	Lone Star (Ind)	Indianapolis Ind
Leisenring Edward B	vp	Whitehall	Philadelphia Pa
Lemasters A V	as t	Lone Star	New York N Y
Lennig J F	s	Giant	Philadelphia Pa
Lentz La Fayette	p	Whitehall	Philadelphia Pa
Lentz W O	as to vp	Whitehall	Philadelphia Pa
Leonard Howard E	c eng	Vulcanite	Easton Pa
Leonard Warren R	vp gm	Riverside	Los Angeles Cal
Lewis Charles F	gm	Volunteer	Knoxville Tenn
Lewis George E	as t	Lone Star (Pa)	Nazareth Pa
Lind John G	vp gm pa	St Mary's	St Mary's Ont Can
Lindahl O N	com s	Universal Atlas	New York N Y
Lindsay G L	eng tes	Universal Atlas	New York N Y
Linn H F	c chem	Trinity	Eagle Ford Tex
Little A J	sup	Medusa	Bay Bridge O
Lober John C	sec	Vulcanite	Philadelphia Pa
Lockhart L	sup	Ford	Dearborn Mich
Lofstedt C J	sup	Lone Star (Va)	Norfolk Va
Loghry L I	c chem	Superior	Portsmouth O
Long C C	sec	Lehigh	Allentown Pa
Loveland R A	chem	Dewey	Dewey Okla
Loveridge F R	sup	Alpha	Alpha Mo
Lucas A E	chem	Union	Devil's Slide U
Lucas Edwin P	p	Superior Portland	Seattle Wash
Lucas H H	vp	Petoskey	Petoskey Mich
Luck C A	as to gm	Peerless	Detroit Mich

*as assistant, **c** chief, **ch bd** chairman of board, **chem** chemist, **com** committee, **comp** comptroller, **dep** department, **dir** director, **div** division, **el** electrical, **eng** engineer, **fld** field, **g** general, **gm** general manager, **m** manager or managing, **mas mec** master mechanic, **off** office, **op** operating, **p** president, **pa** purchasing agent, **pl** plant, **pro** production, **re** research **s** secretary, **saf** safety, **ser** service, **sup** superintendent, **t** treasurer, **tec** technical, **tes** tests, **traf** traffic, **val** valuation, **vp** vice-president, **wks** works.



. . . *for* **YOUR** *dust collection problem*

BUELL does not carry dust collectors "in stock". Every Buell installation is "made to measure".

When you buy a Buell Dust Collector it is designed and built specifically for the job it is to do *in your plant.* The results you demand are studied and the equipment is designed to produce them. Space available for installation is also considered and the collector built accordingly.

Buell Dust Collectors—of any capacity for any type of dust—incorporate the advantages of the patented Van Tongeren System used exclusively in Buell equipment. Buell has the only cyclones with a dust pocket. Buell *guarantees in advance* the exact percentage of dust of each particle size that will be collected.

The facilities of the Buell Dust Testing Laboratory are at your disposal to help you find a "tailor made" solution to your dust collection problems.

A copy of our booklet
INDUSTRIAL DUST COLLECTION
will be sent upon request

buell
DUST COLLECTORS

SUITE 5000, 12 CEDAR STREET, NEW YORK
BUELL ENGINEERING COMPANY, INC.
Wherever located, you will be quickly served through sales offices of either BUELL ENGINEERING CO. or B. F. STURTEVANT CO.

Officers, Superintendents, Engineers, Chemists and Other Executives of Portland-Cement Manufacturing Companies in the United States and Canada—Continued

(See company list, pages 59 and 62 for full company names and complete local addresses.)

Name	Title*	Company	Address
Lugnet Verner	chem eng	Oregon	Lime Ore
Lundeen C M	sup	Washington-Idaho	Orofino, Ida
Lundteigen A	vp	Ash Grove	Kansas City Mo
Lundy C L	chem	San Antonio	San Antonio Tex
Lyons F G	as s-t	Alpha	Easton Pa
Mable Floyd L	div m	Universal Atlas	New York N Y
Macbeth Norman	vp	Riverside	Los Angeles Cal
MacBride Donald S	vp	Hercules	Philadelphia Pa
MacCarey C R	pa	Hercules	Philadelphia Pa
MacDonald B A	vp	Northwestern States	Mason City Ia
MacDonald Earle	vp	Riverside	Riverside Cal
MacFarland D H	vp	Medusa	Cleveland O
MacLaughan G W	g pa	Edison	West Orange N J
MacNider Hanford	p	Northwestern States	Mason City Ia
Magee J F	vp	Alpha	Easton Pa
Maginnis Stuart P	vp s-t	Keystone	Philadelphia Pa
Mahon R J	g traf m	Lone Star	New York N Y
Mandia J V	c chem	Hawkeye	Des Moines Ia
Manley B E	s gm	Hawkeye	Des Moines Ia
Marshall William H	pa	Glens Falls	Glens Falls N Y
Martin C W	sup	Beaver	Gold Hill Ore
Martin P E	vp	Ford	Dearborn Mich
Masters M	c chem	Superior	Seattle Wash
Mather J W	s	Missouri	St. Louis Mo
Matthes J J	t	Alpha	Easton Pa
Matthes W L	pl m	Alpha	Manheim W Va
Matthews Guy	chem	Marquette	Cape Girardeau Mo
Matthews M O	m	Arkansas Oklahoma	Ada Okla
Matthews R C	sup	Marquette	Cape Girardeau Mo
Maytham W J	eng	Northwestern States	Mason City Ia
McAllister R W	sup	Pittsburgh	East Fultonham O
McArdle C S	vp	Missouri	St. Louis Mo
McCall Archie	as s	California	Los Angeles Cal
McCanless W A	vp	Yosemite	Merced Cal
McCann F P	vp	Riverside	San Francisco Cal
McCarthy J A	p	Pacific	San Francisco Cal
McCaslin F E	s-t	Oregon	Portland Ore
McClarnan H M	sup	Alpha	La Salle Ill
McClenahen J M	sup	Oregon	Lime Ore
McConnell L G	vp	Lone Star (Pa)	New York N Y
McDonald L M	sup	Canada	Port Colborne Ont Can
McDonald Thomas	c eng	Louisville Co Louisville Corp	Speed Ind
McFadden H C	as s as t	Ash Grove	Kansas City
McGinnis F S	vp	Southwestern	65 Market St San Francisco Cal
McIntosh J H	wks m	British Columbia	Bamberton B C Can
McKee D C	vp	Bessemer	Youngstown O
McKee F C	vp	West Penn	Butler Pa
McKee John D	vp	Pacific	San Francisco Ca
McKelvy F G	p	Alpha	Easton Pa
McMillen James T	vp	Wabash	Detroit Mich
Medley R H	pa	Hermitage	Nashville Tenn
Meighan H M	c chem	Whitehall	Allentown Pa
Mein William W	p	Calaveras	San Francisco Cal
Melton Frank	chem	Hermitage	Nashville Tenn
Merrill C C	vp gm	Southwestern	Los Angeles Cal
Mertens G W	vp	Pacific Coast	Seattle Wash
Metcalf William H	s-t	Riverside	San Francisco Cal
Meyer Albert P	vp	Green Bag (Pa)	Pittsburgh Pa
Meyers S L	c chem	Southwestern	El Paso Tex
Michael C F	as s	Nazareth	Nazareth Pa
Miller C G	chem	Medusa	Bay Bridge O
Miller Howard	s-t t	Consolidated Florida Trinity	Chicago Ill
Miller John A	p	Pennsylvania-Dixie	New York N Y
Mills M E	as t	Peerless	Detroit Mich
Miner J L	vp	Atlas-Lumnite	New York N Y
Mitchell C P	sup	Monarch	Humboldt Kan
Mitchell E B	m	Lone Star (Tex)	Houston Tex
Moeller William	sup	Lone Star (Tex)	Dallas Tex
Monday M C	p	Cumberland Hermitage	Burwell Bldg Knoxville Tenn
Mooney Philip	fld eng	Medusa	Cleveland O
Moore Charles J	c chem	Lone Star (Ind)	Limedale Ind
Moore H H	s-t	Superior	Portsmouth O
Moore N D	p	Pacific Coast	Seattle Wash
Moore O L	d r tes	Universal Atlas	New York N Y
Moore Raymond W	vp s	Dewey	Kansas City Mo
Morgan D C	sup	Allentown	Evansville Pa
Morgan Dwight	vp	Lone Star	Norfolk Va
Morgan Edmund C	re chem	Nazareth	Nazareth Pa
Morrow C E	chem	Medusa	Crescentdale Pa
Morse D J	traf mgr	Gulf	Box 3046 Houston Tex
Moyer Albert	p	Vulcanite	45th St & Park Av New York N. Y
Moyle Frank	sup	Marquette	La Salle Ill
Moyle R sr	vp	Marquette	La Salle Ill
Muirhead W H	vp	Beaver	Gold Hill Ore
Murdock A H	sup	Pacific	Gerlach Nev
Murgittroyd W H	vp	Idaho	713 Sprague Av Spokane Wash
Murphy C J	chem	Canada	Fort White Man Can
Murphy Dan	p	California	Los Angeles Cal
Murphy D J	vp s-t	Santa Cruz	San Francisco Cal
Murray W F	vp pa	Wolverine	Coldwater Mich
Myers S L	c chem	Southwestern	El Paso Tex
Nagle William F	traf m	Coplay	Coplay Pa
Narsted J	c eng	Canada	Montreal Que Can
Neill F D	sup	Spokane	Irvin Wash
Neil R K	ch bd p	Spokane	Spokane Wash
Nelson Buell C	s	Beaver	Portland Ore
Nelson J L	vp	Wolverine	Coldwater Mich
Nelson N H	sup	Superior Portland	Seattle Wash
Nestor Robert	chem	Pacific	Gerlach Nev
Newhard E P	sup	Pennsylvania-Dixie	Clinchfield Ga
Newhard George E	sup	Valley Forge	West Conshohocken Pa
Newlands L C	p	Oregon	Portland Ore
Nichol C D	vp	Oklahoma	1018 Perrine Bldg Oklahoma City Okla
Nichols Henry D	vp	Riverside	200 Bush St San Francisco Cal
Nichols Ralph	sup	Canada	Steep Rock Man Can
Nicholson George A	p	Georgia National	Birmingham Ala
Noble Charles H jr	t	Hercules	Philadelphia Pa
Nodell L C	chem	Wolverine	Coldwater Mich
Nork J A	pa	Allentown Valley Forge	Catasauqua Pa
Norton William	eng	Manitowoc	Manitowoc Wis
Norvig Johan	g sup	Pennsylvania-Dixie	Nazareth Pa
Nottingham G W	sup	Pacific	Gerlach Nev
Nunn Arthur	sup	Consolidated	Fredonia Kan
Nyman E O	s pa	Petoskey	Petoskey Mich
O'Callaghan J	sup	Lone Star (Kan)	Bonner Springs Kan
O'Connor T E	t	Universal Atlas	New York N Y
Odenkirk E B	as t	Medusa	Cleveland O
Oesterle A A	sup	Federal	Buffalo N Y
Olsen G J	sup	California	Colton Cal
Olver M D	chem	Valley Forge	West Conshohocken Pa
Palmer Lester E	wks m	Wabash	Osborn O
Park M R	off m	Georgia	Atlanta Ga
Parker F F	sup eng	Pacific	San Juan Bautista Cal
Parker G S	sup	Dewey	Davenport Ia
Parks Charles R	t	North American	Albany N Y
Pearson Frank	s-t	Cumberland	Cowan Tenn
Pearson J C	dir res	Lehigh	Allentown Pa
Pearson W L	pa	Pennsylvania-Dixie	Nazareth Pa
Pelly B B	s	Olympic	Seattle Wash
Pennicuik N	as comp	Lone Star	New York N Y
Perine R R	as t	Lone Star (La)	New Orleans La
Peters C B	off m	Lone Star	New York N Y
Peters S N	vp	Giant	Philadelphia Pa
Pettingell R E	chem	Canada	Port Colborne Ont Can
Phelan James T	sup	Glens Falls	Glens Falls N Y
Phillips B D	p	West Penn	Butler Pa
Phillips Carl	chem	Petoskey	Petoskey Mich
Phillips C E	sup	Missouri	Prospect Hill Mo
Phillips G B	sup	Standard Lime	Martinsburg W Va
Pickford Frederic	as s	Medusa	Cleveland O
Pierson George E	vp	Lone Star (Ind)	Indianapolis Ind
Poore George P jr	sup	Calaveras	San Andreas Cal
Porter John J	p	North American	285 Madison Av New York N Y
Posselt E	vp	Lone Star	New York N Y
Powell F H	p	Southwestern	Los Angeles Cal
Powell W M	saf dir	Medusa	Cleveland O
Price Carl M	chem	Permanente	San Jose Cal
Pritchard L R	c chem	Lone Star (N. Y)	Hudson N Y
Puckett C L	pa	Colorado Ideal Nebraska Three Forks Union	Denver Colo

*as assistant, c chief, ch bd chairman of board, chem chemist, com committee, comp comptroller, dep department, dir director, div division, el electrical, eng engineer, fld field, g general, gm general manager, m manager or managing, mas mec master mechanic, off office, op operating, p president, pa purchasing agent, pl plant, pro production, re research, s secretary, saf safety, ser service, sup superintendent, t treasurer, tec technical, tes tests, traf traffic, val valuation, vp vice-president, wks works.

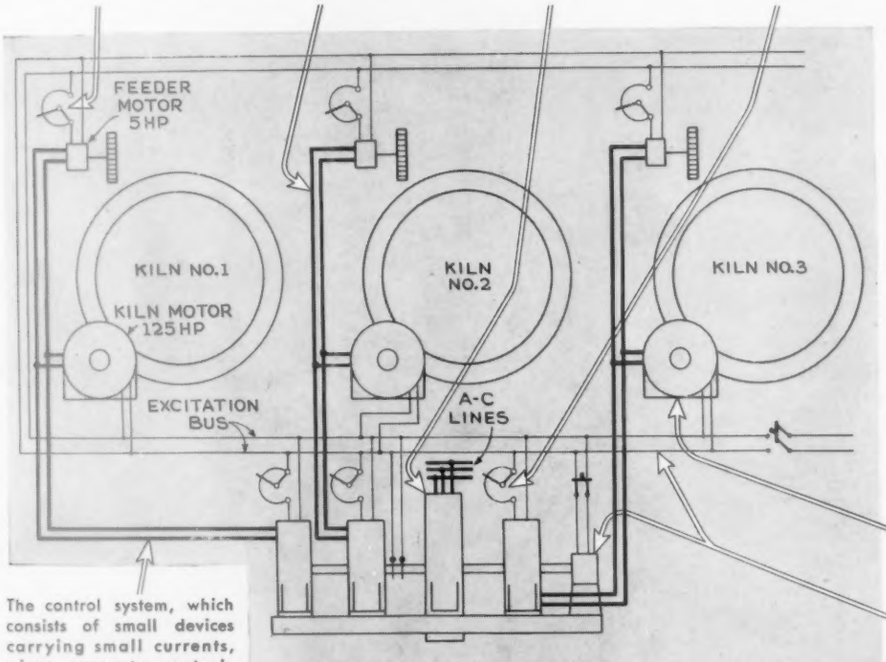
HAVE YOU HEARD?

A rheostat in the feeder-motor field makes possible an adjustable ratio of feeder speed to kiln speed

No heavy contactors or resistors in the motor lines to cause wear and tear, maintenance expense, and down time

A synchronous motor driving generators for all units improves plant efficiency and power factor

Generator field control accurately regulates speed of both feed and drive motors over a wide range, assuring close synchronization



The control system, which consists of small devices carrying small currents, gives accurate control, and reduces maintenance expense

HERE'S HOW IT WORKS

The kiln drive motor, with constant field excitation, exerts steady, high starting-torque without shock on gearing

Excitation power for all equipment may be supplied either from a plant bus or from an exciter on the motor-generator set

AFTER years of successful operation in hundreds of applications—steel-mill equipment, shovels, elevators, hoists—this drive has been adapted for cement kilns because of the outstanding advantages it offers. The first installation—in service for two years—has met all demands for a kiln drive to provide ideal starting conditions and smooth, stepless speed control. In benefits to you, this means reduced maintenance expense, long life of equipment, and a reduction of costly down time.

If you are interested, why not ask us to have a cement-mill specialist work with you and your consulting engineers in laying out one of these new drives to fit your own conditions? General Electric, Schenectady, N. Y.

GENERAL ELECTRIC

652-2

Officers, Superintendents, Engineers, Chemists and Other Executives of Portland-Cement Manufacturing Companies in the United States and Canada—Continued

(See company list, pages 59 and 62, for full company names and complete local addresses.)

Name	Title*	Company	Address
Raber Charles T	chem	Glens Falls	Glens Falls N Y
Rader B H	vp	Lehigh	111 W Washington St Chicago Ill
Raff Ray M	s-t	Diamond	Middle Branch O
Raff R D	p gm	Diamond	Middle Branch O
Rahn G J	eng	Marquette	La Salle Ill
Ramage W L	as t	Edison	West Orange N J
Rawlings Stuart L	vp	Calaveras	San Francisco Cal
Ray J M	chem	Pittsburgh	East Fultonham O
Readinger H Y	t	Hawkeye	Des Moines Ia
Reed-Lewis W J	eng	Lawrence	New York N Y
Reeves R C	sup	Blue Diamond	Monrovia Cal
Reichenbach H A	g sup	Nazareth	Nazareth Pa
Reid A J	s	St Mary's	Toronto Ont Can
Reid H P	eng	Universal Atlas	New York N Y
Reiter George H	vp	Universal Atlas	New York N Y
Reitze Chester N	vp gm	Superior Portland	Seattle Wash
Reuter J A	vp	Northwestern	The Dalles Ore
Rhodes Fred H	p gm	Monarch	Humboldt Kan
Richards Floyd	chem	Northwestern	Grotto Wash
Richardson George M	sec	National Portland	Philadelphia Pa
Richardson W M	p	National Portland	Philadelphia Pa
Rinehart C R	c chem	Diamond	Middle Branch O
Riordan Joseph	sup	Santa Cruz	Davenport Cal
Roadstrum Victor N	ch bd	Pennsylvania-Dixie	New York N Y
Robeson H B	vp	Nazareth	Nazareth Pa
Robison S J	c eng	Universal Atlas	New York N Y
Robotham C A	as sup eng	Riverside	Riverside Cal
Rodarmel Claude	sup	Oklahoma	Ada Okla
Rogers Alfred	p	St Mary's	Toronto Ont Can
Rohwer O H D	vp	Universal Atlas	New York N Y
Ronk Frank	chem	Olympic	Bellingham Wash
Rooney A J	vp	Huron Wyandotte	Detroit Mich
Root F E	t	Wolverine	Coldwater Mich
Roscoe R E	vp	Bessemer	Youngstown O
Rumfelt Claude	sup	Wolverine	Quincy Mich
Russell G A	s-t t	Canada National (Canada)	Montreal Que Can
Russell W B	as s ch eng	Peerless	Detroit Mich
Russell W C	vp gm	Peerless	Detroit Mich
Sabin W P	vp t	Ash Grove	Kansas City Mo
Sadd W A	ch bd	Signal Mountain	Chattanooga Tenn
Saeger Geoff A	ch chem	Gulf	Houston Tex
Sandoz E W	sup	Spokane	Powell Spur Wash
Sawyer R A	vp	Lone Star (La)	New Orleans La
Saxby L W	as to p	Marquette	Chicago Ill
Schaeffer J Allen	ch chem	Hercules	Nazareth Pa
Schatzlein K J	as s-t	Lehigh	Allentown Pa
Scherr Harry	vp s	Green Bag (WVa)	Kenova W Va
Schulzke O F	sup	Missouri	Sugar Creek Mo
Scott Harold M	p	Keystone	Philadelphia Pa
Scott R P	as sup	Universal Atlas	Independence Kan
Sebaugh J H	pa	Pittsburgh	Zanesville O
Senior John L	p	Consolidated Florida Signal Mountain Trinity	Chicago Ill
Sepic M M	s-t	Peerless	Detroit Mich
Shaddix J E	chem	National (Alabama)	Ragland Ala
Shea Charles A	tr	Permanente	Palace Hotel San Francisco Cal
Shelby Arthur B	vp gm	Calaveras	San Francisco Cal
Sheppard Edgar F	s-t	Lawrence	150 Broadway New York NY
Shipley H R	sup	Oregon	Oswego Ore
Shipley L E	chem	Canada	Montreal East Que Can
Shumberger John N jr	val eng	Lehigh	Allentown Pa
Sieler Julius	s-t	South Dakota	Rapid City S D
Simmon D B	pa g sup ch eng	Southern States	Rockmart Ga
Simons E J	p	Washington-Idaho	Spokane Wash
imons E J jr	vp	Washington-Idaho	Spokane Wash
Sims N M	pa	Great Lakes	Buffalo N Y
Sincell J E	pa	Green Bag (Pa)	Neville Island Pa
Singleton J Ed	vp	Glens Falls	Glens Falls N Y
Slocum R L	sup	Universal Atlas	Universal Pa
Sly Homer	vp	Petoskey	Petoskey Mich
Smith A F	vp	Monolith	Los Angeles Cal
Smith Arthur G	ch eng	Northwestern	Seattle Wash
Smith Blaine S	p	Universal Atlas	New York N Y
Smith Earl R	s-t	Washington-Idaho	Spokane Wash
Smith E B	eng	Dewey	Davenport Ia
Smith F E	sup	Northwestern States	Mason City Ia
Smith George	sup	Northwestern States	Gilmore City Ia
Smith J B	t	Calaveras	San Francisco Cal
Smith L E	sup	Medusa	Dixon Ill
Smith W Marshall	chem	Huron	Alpena Mich
Snell Don	chem	Consolidated	Cement City Mich
Snow Ann D	vp	Portland	Salt Lake City U
Snow Ashby	p	Portland	Salt Lake City U
Snow E P	sup	Portland	Salt Lake City U
Snow Herbert A	s-t	Portland	Salt Lake City U
Snyder H N	vp t	Federal	Buffalo N Y
Sparks H S	sup	Southwestern	El Paso Tex
Speed William S	ch bd	Louisville Co	Louisville Ky
Speich C J	sup	Lone Star (Va)	Norfolk Va
Spencer E G	as sup	Longhorn	Longhorn Tex
Stancliff A D	g sup	Lone Star (La)	New Orleans La
Stark A O	vp	Universal Atlas	New York N Y
Statter Brockwell	p gm	Beaver	Portland Ore
Steese R C	ch of bd	Bessemer	Youngstown O
Steiner Herbert E	vp	Coplay	521 Fifth Av New York N Y
Stevens Harold	sup	Standard	Painesville O
Stewart Stanley G	vp	Consolidated	Chicago Ill
Stiffler E E	chem	Medusa	Silica O
Stone F L	vp	Universal Atlas Consolidated	New York N Y
Storey Smith W	p vp	Florida Signal Mountain Trinity	Chicago Ill
Strange E W	as t	Lone Star (Ala)	Birmingham Ala
Struckman Carl	eng	California	Colton Cal
Struckman Helger	as sup	Lone Star (La)	New Orleans La
Stugard Frederick R.	pl mgr	Hermitage	Nashville Tenn
Stutz C H	traf m	National (Alabama)	Birmingham Ala
Sulfridge John	sup	Peerless	Detroit Mich
Summers J H	sup	Blue Diamond	Roscoe Cal
Sunderland A B	s as t	Ash Grove	Kansas City Mo
Sunderland L T	p	Ash Grove	Kansas City Mo
Sutherland R G	g sup	Lone Star (N Y)	Hudson N Y
Sutton John G	vp	Pacific	San Francisco Cal
Swayze M A	dir re	Lone Star	Hudson N Y
Sweeney Frank A	vp	Edison	New York N Y
Swegman W J	wks m	Wabash	Detroit Mich
Swett B L	vp	Lehigh	Allentown Pa
Tallerday Howard G	vp	Yosemite	San Francisco Cal
Tasto William	sup	San Antonio	Cementville Tex
Taylor Charles B	sup	Louisville N Y	Brixment N Y
Tedesco J	s	Calaveras	San Francisco Cal
Thomas F C	g sup	Standard Lime	Martinsburg W Va
Thomas W H	pa	National (Alabama)	Regland Ala
Thompson J G	chem	Lawrence	Thomaston Me
Thornton W M	vp	Longhorn	San Antonio Tex
Thune Erik	vp	National Portland	Philadelphia Pa
Tiedemann F G	pa	Kosmos	Kosmosdale Ky
Tilley W H	c chem	Lone Star (Tex)	Houston Tex
Tillotson Harold	c eng	Petoskey	Petoskey Mich
Titsworth H H	p	Glens Falls	Glens Falls N Y
Titus Glenn	c chem	Green Bag (Pa)	Neville Island Pa
Todd George P	vp	Vulcanite	Philadelphia Pa
Tomlin Edwin	m dir t	British Columbia	Victoria B C Can
Tongue Gordon P	t s	Superior Portland	Seattle Wash
Town F E	sup	Manitowoc	Manitowoc Wis
Townsend Paul H	gm	Huron	Detroit Mich
Traynor F M	vp	Florida	Chicago Ill
Treat G G	p	Bessemer	Youngstown O
Treshow M	g sup	Monolith	Los Angeles Cal
Turk A	c eng	Diamond	Middle Branch O
Twamley J F	vp	Coplay	New York N Y
Tyree A M	s pa	North American	Baltimore Md
Tyler D M	vp	Dewey	Dewey Okla
Tyler Frank E	p gm	Dewey	Kansas City Mo
Tyler Waldo E	vp	Dewey	Kansas City Mo
Uhle D J	vp	Coplay	Coplay Pa
Uhlig R G	vp op m	Missouri	St. Louis Mo
Underhill H O	sup	Alpha	Birmingham Ala
Uren A J	vp sales	Yosemite	San Francisco Cal
Uren C H	pa	Yosemite	Merced Cal
Vanderwerp H	vp	Manitowoc Medusa	Cleveland O
Van Slyke A H	s	Yosemite	San Francisco Cal
Van Zandt Paul C	vp	Universal Atlas	New York N Y

*as assistant, c chief, ch bd chairman of board, chem chemist, com committee, comp comptroller, dep department, dir director, div division, el electrical, eng engineer, fld field, g general, gm general manager, m manager or managing, mas mec master mechanic, off office, op operating, p president, pa purchasing agent, pl plant, pro production, re research, s secretary, saf safety, ser service, sup superintendent, t treasurer, tec technical, tes tests, traf traffic, val valuation, vp vice-president, wks works.

Uniform Separation

The new model GAYCO Centrifugal air separator makes possible the uniform and increased recovery of cement and other extremely fine materials within a range of 60 to 400 mesh.

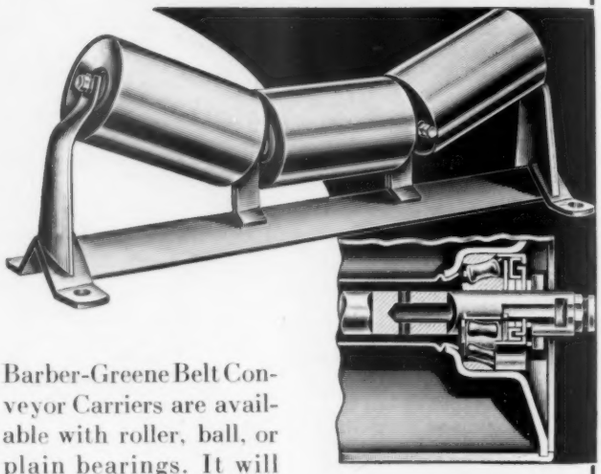
- Greater Capacity
- Cleaner Tailings
- 99% Through 325 Mesh
- 25% to 30% greater recovery of fines.
- Not affected by variation in speed or rate of feed.

Manufacturers also of "Reliance" Crushers, Screens, Elevators, Conveyors, Bin Gates, Grizzlies. Complete crushing, screening and washing plants for crushed stone, sand and gravel.

UNIVERSAL ROAD MACH'Y CO.

Rubert M. Gay Division 117 Liberty St. New York, N. Y.
Canadian Representative: F. H. Hopkins & Co., Ltd., Montreal

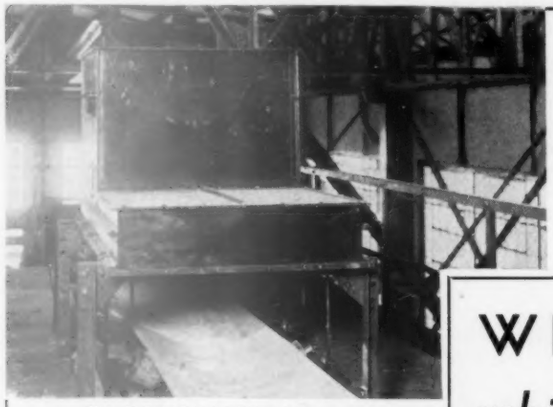
Barber-Greene Dependability



Barber-Greene Belt Conveyor Carriers are available with roller, ball, or plain bearings. It will pay you to have full information on these carriers before ordering replacements or a new conveyor.

'Phone, wire, or write. There is no obligation.

Standardized Material Handling Machines
BARBER GREENE
Aurora, Illinois

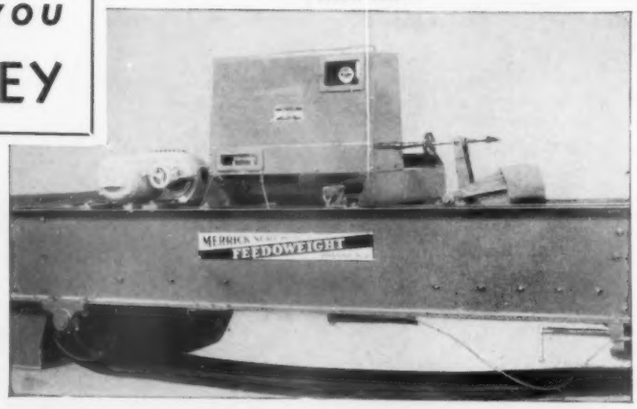


The WEIGHTOMETER for accurate automatic continuous weighing.

WEIGH *while you* CONVEY

Cement plants and other industrial works have demonstrated the reliability, economy and extreme accuracy of Merrick WEIGHTOMETERS and FEEDOWEIGHTS. If you handle bulk materials on a belt conveyor, the WEIGHTOMETER will provide a constant, accurate record of weights while in transit. FEEDOWEIGHT is a conveyor-type feeder scale which automatically registers and uniformly feeds materials by weight, correctly feeds two or more materials, is ideally adapted for batch or continuous proportioning.

The FEEDOWEIGHT—an automatic, continuous feeder scale.



MERRICK Weighing Devices have been serving industry for more than thirty years. Most of the early installations are still giving honest, accurate service. The company's best testimonial is the large number of repeat orders for additional equipment from these same users. Merrick engineers are ready at all times to discuss your weighing problems, to assist you in solving them, without obligating you in any way. May we also serve you?

MERRICK SCALE MFG. CO., PASSAIC, N. J.

Officers, Superintendents, Engineers, Chemists and Other Executives of Portland-Cement Manufacturing Companies in the United States and Canada—Continued

(See company list, below and on page 62, for full company names and complete local addresses.)

Name	Title*	Company	Address
Velzey J H	sup	Southwestern	Osborn O
Viets W E	as s-t	Alpha	Chicago Ill
Wagner C L	v p	Superior	Concrete Wash
Wagner L A	ch re chem	Missouri	9403 Riverview Drive St Louis Mo
Wallerstedt C A	sup	Universal Atlas	Waco Tex
Walter Floyd	sup	Pennsylvania-Dixie	Nazareth Pa
Warner M J	p	Nazareth	Nazareth Pa
Warren Frank B	v p	Bessemer	Youngstown O
Warren G E	v p	Southwestern	Osborn O
Watkins H M	s-t	Pacific Coast	Seattle Wash
Watkins J E	eng	San Antonio	Cementville Tex
Watling John W	v p	Wabash	Detroit Mich
Watson B G	as comp	Riverside	Los Angeles Cal
Weatherly H M	pa	Volunteer	Knoxville Tenn
Weaver R S	p	Allentown	Catasauqua Pa
Wechter Eugene J	re chem	Louisville	Louisville Ky
Wecker W A	p t	Marquette	Chicago Ill
Weibel F A	s-t	Allentown / Valley Forge	Catasauqua Pa
Weisheyer Jacob	2d v p t	Missouri	St Louis Mo
Werner Floyd	sup	Pennsylvania-Dixie	Portland Point N Y
Wescoe C H	as s-t	Lehigh	Allentown Pa
Wesson L	op m	Universal Atlas	New York N Y
West Charles C	v p	Manitowoc / Medusa	Manitowoc Wis
West C T	pa e eng	Monolith	Los Angeles Cal
Wetzel H T	pa	Alpha	Easton Pa
Wheeler J P	as s-t	Lone Star	New York N Y
Wheeler L J	sup	Lone Star (Tex)	Houston Tex
Wherrett H S	p	Pittsburgh	Pittsburgh Pa
White Ben T	p	Southern States	Cadiz Ky
White J L	sup	Alpha	Martin's Creek Pa
Whiting H M	s-t	Nazareth	Nazareth Pa
Whitlatch E E	sup	Medusa	York Pa
Whitney Roland	pa	Louisville	Louisville Ky
Wibel A M	pa	Ford	Dearborn Mich
Wiese G F	sup	Longhorn	San Antonio Tex
Wight H F	dis m	Edison	New York N Y
Wigley E C	quar fore	Universal Atlas	Waco Tex
Wilder C A	s-t	West Penn	Butler Pa
Wilhelm H E	t	Gulf	Box 3046 Houston Tex
Wilkinson J E	sup	Missouri	1600 Chelsea Av Memphis Tenn
Williams C S	v p	Edison	West Orange N J
Williams D R	c chem	Monolith	Laramie Wyo
Williams L B	sup	Cumberland	Cowan Tenn
Willingham D E	sup	Louisville Corp	Speed Ind
Willson R M	c chem	Southwestern	Victorville Cal
Wilsnack George	c chem	Edison	New Village N J
Wilson J D	chem	Trinity	Box 152 Houston Tex
Wing Walter S	v p	Pennsylvania-Dixie	New York N Y
Winsch M W	sup	Universal Atlas	Northampton Pa
Wishon A Emory	p	Yosemite	San Francisco Cal
Witt J C	tec serv m	Marquette	Chicago Ill
Witte G A	sup	North American	Catskill N Y
Wittenberg G J	sup	Consolidated	Cement City Mich
Woessner J F	comp t as s	Green Bag (Pa)	Pittsburgh Pa
Wolf Morris	s	Hercules	Philadelphia Pa
Wood A T	t gm	Green Bag (W Va)	Kenova W Va
Wood Warren	c chem	Portland	Salt Lake City U
Woods Hubert	c chem	Riverside	Crestmore Cal
Wortham Gus S	p	Longhorn	San Antonio Tex
Worthy W J	sup	Medusa	Silica O
Wulf Walter H	v p	Monarch	Humboldt Kan
Wyman C E	as s	Medusa	Cleveland O
Yike D W	chem	Volunteer	Knoxville Tenn
Yike J S	c chem	Great Lakes	Buffalo N Y
Young Joseph S	p	Lehigh	Allentown Pa
Young Roy N	c eng	Lehigh	Allentown Pa
Young W J	c eng	Standard Lime	Martinsburg W Va
Zook J B	c eng	Great Lakes	Buffalo N Y

*as assistant, c chief, ch bd chairman of board, chem chemist, com committee, comp comptroller, dep department, dir director, div division, el electrical, eng engineer, fld field, g general, gm general manager, m manager or managing, mas mec master mechanic, off office, op operating, p president, pa purchasing agent, pl plant, pro production, re research, s secretary, saf safety, ser service, sup superintendent, t treasurer, tec technical, tes tests, traf traffic, val valuation, vp vice-president, wks works.

Directory of Portland-Cement Companies in the United States and Canada

Aetna Portland Cement Co.
Bay City, Mich.

Allentown Portland Cement Co.
Fuller Bldg.
Catasauqua, Pa.

Alpha Portland Cement Co.
15 S. Third St.
Easton, Pa.

Arkansas Portland Cement Co.
Denver National Bldg.
Denver, Colo.

Ash Grove Lime & Portland Cement Co.
Fairfax Bldg.
Kansas City, Mo.

Beaver Portland Cement Co.
602 Lumbermen's Bldg.
Portland, Ore.

Bessemer Limestone & Cement Co.
1106 City Bank Bldg.
Youngstown, O.

British Columbia Cement Co., Ltd.
Belmont House
Victoria, B. C., Can.

Calaveras Cement Co.
315 Montgomery St.
San Francisco, Cal.

California Portland Cement Co.
601 W. Fifth St.
Los Angeles, Cal.

Canada Cement Co., Ltd.
Canada Cement Bldg.
Montreal, Que., Can.

Canadian Foreign Investment Corp., Ltd.
1111 Beaver Hall Hill
Montreal, Que., Can.

Colorado Portland Cement Co.
Denver National Bldg.
Denver, Colo.

Consolidated Cement Corp.
111 W. Monroe St.
Chicago, Ill.

Coplay Cement Mfg. Co.
Coplay, Pa.

Cowell Portland Cement Co.
2 Market St.
San Francisco, Cal.

Cumberland Portland Cement Co.
Cowan, Tenn.

Dewey Portland Cement Co.
101 W. Eleventh St.
Kansas City, Mo.

Diamond Portland Cement Co.
Middle Branch, O.

Edison Cement Corp.
444 Madison Ave.
New York, N. Y.

Federal Portland Cement Co.
P. O. Box 115
Buffalo, N. Y.

Florida Portland Cement Co.
111 W. Monroe St.
Chicago, Ill.

Ford Motor Co.
Dearborn, Mich.

Georgia Cement & Products Co.
722 Forsyth Bldg.
Atlanta, Ga.

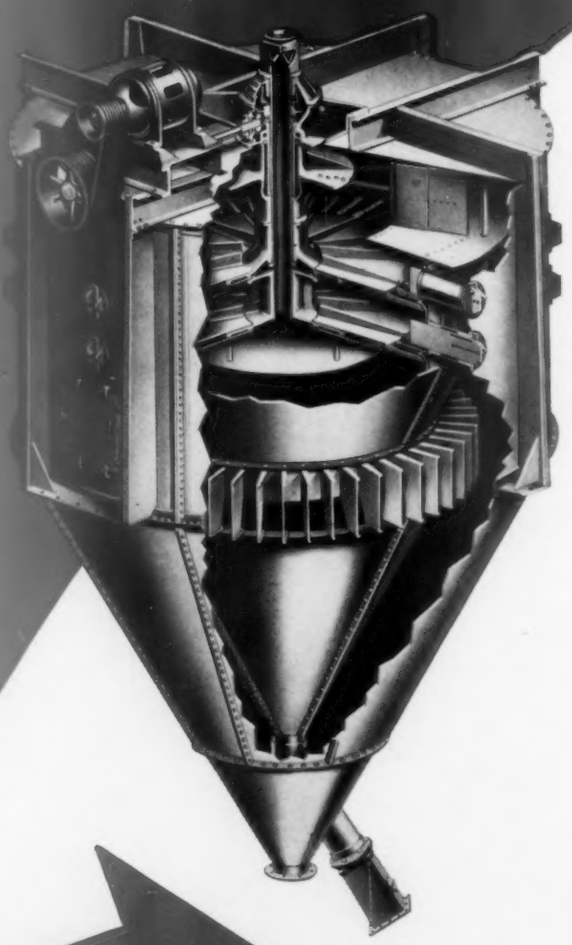
Giant Portland Cement Co.
602 Pennsylvania Bldg.
Philadelphia, Pa.

Glens Falls Portland Cement Co.
205 Lower Warren St.
Glens Falls, N. Y.

Great Lakes Portland Cement Corp.
999 Fuhrmann Blvd.
Buffalo, N. Y.

Green Bag Cement Co. of Pennsylvania
1905 Grant Bldg.
Pittsburgh, Pa.

Let RAYMOND



SEPARATING

When you require the ultimate in extreme fineness and uniformity, use the Raymond **double whizzer type** Mechanical Air Separator to classify your mill grind.

This latest model . . . built by the originators of air separation . . . offers you the engineering features and operating advantages of fifty years' development.

1. The double whizzer action is effective in extracting maximum fines and rejecting oversize . . . and insuring cleaner tailings.
2. Easy fineness control is made possible by vertical damper slides, quickly adjusted from the outside, while operating.
3. Extra high capacities and record low production costs . . . plus finely engineered construction throughout . . . all contribute to the dependable performance of the Raymond Mechanical Air Separator.

DOUBLE WHIZZER Separator

If you have a problem in the production of high early strength cements, superfine grades of hydrated lime, phosphate rock, limestone or other powdered materials . . . Raymond engineers can help you plan your production for greater economy.

show you the way

TO PRODUCTION ECONOMY

FIRING

You can make your greatest saving by a reduction in your coal preparation costs through the use of the Raymond Bowl Mill.

Its high availability, wide capacity range, noiseless operation, ease of adjustment and economy in pulverizing, have made it the most sensationally successful direct-firing unit in use in industry today.

It pays to modernize your coal grinding-and-firing system with a Bowl Mill. In many installations on rotary cement and lime kilns, the overall economies of the Bowl Mill have liquidated the cost of the equipment in less than two years.

Modernize . . . if you want to **economize!**

By using these modern types of Raymond equipment . . . which have been developed to peak efficiency by a half-century of experience . . . you will have the most advanced methods of separating cement, lime and other non-metallic minerals . . . and in the firing of coal to rotary kilns.

These machines offer definite reductions in manufacturing costs and improvement in product quality, because they give closer control over your operations.

Write for Bulletins

RAYMOND PULVERIZER DIVISION
COMBUSTION ENGINEERING COMPANY, INC.
1321 North Branch Street CHICAGO
Sales Offices in Principal Cities . . . In Canada: Combustion Engineering Corporation, Ltd., Montreal

Green Bag Cement Co. of W. Va.
Kenova, W. Va.

Gulf Portland Cement Co.
North Side Ship Channel, Clinton Docks
Houston, Tex.

Hawkeye Portland Cement Co.
802 Hubbell Bldg.
Des Moines, Ia.

Hercules Cement Corp.
1700 Walnut St.
Philadelphia, Pa.

Hermitage Portland Cement Co.
902 American Trust Bldg.
Nashville, Tenn.

Huron Portland Cement Co.
1325 Ford Bldg.
Detroit, Mich.

Idaho Portland Cement Co.
Inkom, Ida.

Ideal Cement Co.
Denver National Bldg.
Denver, Colo.

Keystone Portland Cement Co.
1400 S. Penn Square
Philadelphia, Pa.

Kosmos Portland Cement Co.
1429 Starks Bldg.
Louisville, Ky.

Lawrence Portland Cement Co.
Northampton, Pa.

Lehigh Portland Cement Co.
Young Bldg.
Allentown, Pa.

Lone Star Cement Corp.
342 Madison Ave.
New York, N. Y.

Lone Star Cement Corp., Alabama Div.
Comer Bldg.
Birmingham, Ala.

Lone Star Cement Corp., Indiana Div.
1415 Merchants' Bank Bldg.
Indianapolis, Ind.

Lone Star Cement Corp., Kansas Div.
1811 Federal Reserve Bank Bldg.
Kansas City, Mo.

Lone Star Cement Corp., Louisiana Div.
1120 Hibernia Bank Bldg.
New Orleans, La.

Lone Star Cement Corp., New York Div.
75 State St.
Albany, N. Y.

Lone Star Cement Corp., Pennsylvania Div.
Nazareth, Pa.

Lone Star Cement Corp., Texas Div.
1402 Santa Fe Bldg.
Dallas, Tex., and
1501 Shell Bldg.
Houston, Tex.

Lone Star Cement Corp., Virginia Div.
National Bank of Commerce Bldg.
Norfolk, Va.

Longhorn Portland Cement Co.
Alamo National Bldg.
San Antonio, Tex.

Louisville Cement Co.
315 Guthrie St.
Louisville, Ky.

Louisville Cement Co. of New York
Akron, N. Y.

Louisville Cement Corp.
Speed, Ind.

Manitowoc Portland Cement Co.
Manitowoc, Wis.

Marquette Cement Mfg. Co.
140 S. Dearborn St.
Chicago, Ill.

Medusa Portland Cement Co.
1000 Midland Bldg.
Cleveland, O.

Missouri Portland Cement Co.
3615 Olive St.
St. Louis, Mo.

Monarch Cement Co.
Humboldt, Kan.

Monolith Portland Cement Co.
215 W. Seventh St.
Los Angeles, Cal.

Monolith Portland Midwest Co.
215 W. Seventh St.
Los Angeles, Cal.

National Cement Co.
430 Martin Bldg.
Birmingham, Ala.

National Cement Co.
P. O. Box 310, Sta. "B"
Montreal, Que., Can.

National Portland Cement Co.
420 Bourse Bldg.
Philadelphia, Pa.

Nazareth Cement Co.
Nazareth, Pa.

Nebraska Cement Co.
Denver National Bldg.
Denver, Colo.

North American Cement Corp.
40 Howard St.
Albany, N. Y.

Northwestern Portland Cement Co.
Northern Life Tower
Seattle, Wash.

Northwestern States Portland Cement Co.
First National Bank Bldg.
Mason City, Ia.

Oklahoma Portland Cement Co.
Denver National Bldg.
Denver, Colo.

Olympic Portland Cement Co., Ltd.,
Dexter Horton Bank Bldg.
Seattle, Wash.

Oregon Portland Cement Co.
111 S. E. Madison St.
Portland, Ore.

Pacific Coast Cement Co.
Pacific Coast Terminals
Foot of Main St.
Seattle, Wash.

Pacific Portland Cement Co.
111 Sutter St.
San Francisco, Cal.

Peerless Cement Corp.
1144 Free Press Bldg.
Detroit, Mich.

Pennsylvania-Dixie Cement Corp.
60 E. 42nd Street
New York, N. Y.

Permanente Corp.
1522 Latham Square Bldg.
Oakland, Cal.

Petoskey Portland Cement Co.
438 E. Lake St.
Petoskey, Mich.

Pittsburgh Coke & Iron Co.
P. O. Box 1645
Pittsburgh, Pa.

Pittsburgh Plate Glass Co., Columbia Cement Div.
2129 Grant Bldg.
Pittsburgh, Pa.

Portland Cement Co. of Utah
Box 1469
Salt Lake City, Utah

Riverside Cement Co.
621 S. Hope St.
Los Angeles, Cal.

St. Mary's Cement Co., Ltd.
357 Bay St.
Toronto, Ont., Can.

San Antonio Portland Cement Co.
1301 W. Martin St.
San Antonio, Tex.

Santa Cruz Portland Cement Co.
Crocker Bldg.
San Francisco, Cal.

Signal Mountain Portland Cement Co.
530 Volunteer Bldg.
Chattanooga, Tenn.

South Dakota Cement Plant
Rapid City, S. D.

Southern States Portland Cement Co.
Rockmart, Ga.

Southwestern Portland Cement Co.
727 W. 7th St.
Los Angeles, Cal.

Spokane Portland Cement Co.
724 Old National Bank Bldg.
Spokane, Wash.

Standard Line & Stone Co.
2000 First National Bank Bldg.
Baltimore, Md.

Standard Portland Cement Co.
Painesville, O.

Superior Cement Corp.
Portsmouth, O.

Superior Portland Cement, Inc.
1003 Seaboard Bldg.
Seattle, Wash.

Three Forks Portland Cement Co.
Denver National Bldg.
Denver, Colo.

Trinity Portland Cement Co.
1618 Republic Bank Bldg.
Dallas, Tex.

Union Portland Cement Co.
Denver National Bldg.
Denver, Colo.

United States Portland Cement Co.
Denver National Bldg.
Denver, Colo.

Universal Atlas Cement Co.
135 E. 42nd St.
New York, N. Y.

Valley Forge Cement Co.
Fuller Bldg.
Catasauqua Pa.

Volunteer Portland Cement Co.
Fidelity Bankers' Trust Bldg.
Knoxville, Tenn.

Vulcanite Portland Cement Co.
15th & Chestnut Sts.
Philadelphia, Pa.

Wabash Portland Cement Co.
National Bank Bldg.
Detroit, Mich.

Washington-Idaho Lime Products Co.
107 Freya St.
Spokane, Wash.

West Penn Cement Co.
233 S. Main St.
Butler, Pa.

Whitehall Cement Mfg Co.
2538 Fidelity-Philadelphia Trust Bldg.
Philadelphia, Pa.

Wolverine Portland Cement Co.
30 W. Chicago St.
Coldwater, Mich.

Wyandotte Portland Cement
Ford Bldg.
Detroit, Mich.

Yosemite Portland Cement Corp.
564 Market St.
San Francisco, Cal.

The Role of Iron in Portland Cement

By DR. GABRIEL A. ASHKENAZI

COMMERCIAL Portland cement comprises a heterogeneous system of several ingredients. The form in which they exist in cement is still the subject of discussion. However, the concept of cement clinker "as a mixture of phases, definitely determined by the composition and the heat treatment rather than as mixture of hypothetically existing oxides has become established. Chemical analysis shows that the cement ingredients are chiefly composed of lime, silica, alumina and iron oxide. During several decades investigators devoted their attention almost exclusively to the combinations of the first three oxides; those of iron were rather neglected. The reason for this may be found in the fact that the cement scientists ascribed the qualities of cement to the lime-silica and lime-alumina compounds. As to the iron-oxide compounds the general opinion was that they play a subordinate, if any, *rôle* in the hydraulic binding properties of cement.

Yet, every one has been well aware of the fact that the iron content in the raw mixture greatly affects the process of manufacture. It has been generally agreed that iron oxide acts as a flux, thus making the burning of cement easier. This general opinion is expressed by Meade as follows: "Mixtures of silica, alumina and lime, in the proportions usually found in cement, are extremely hard to burn. The replacement of part of the alumina by iron, however, greatly lowers the temperature of burning. In mixtures high in silica, and consequently hard to burn, the addition of some soft iron ore, such as brown hematite, to the mix would lower the temperature at which clinkering takes place and make it easier to produce a sound cement." [2]

Later the idea of alumina-iron oxide ratio was introduced. Several investigations indicated that iron oxide not only acts as a flux but that it combines with calcium. It has been established that the calcium ferrites possess hydraulic properties and part of the alumina in the raw mixtures can be replaced by ferric oxide. It has even been found that alumina is not necessarily an essential component and that cements can be produced of mixtures containing only lime, silica and iron oxide. These cements, however, set very slowly. The opinions regarding the effect of a change in the alumina-iron oxide ratio on the qualities of cement varied considerably. The practical results also showed a contradictory picture. This fact is easily understandable, because the manufacturers based their manipulations with the alumina-iron oxide contents on some vague assumptions. The concept of cement was rather confusing, and still more obscure was the knowledge of the iron combinations in clinker.

According to Hansen, Brownmiller and Bogue in the introduction to their studies on the lime-alumina-iron oxide system, published in the year 1938,[3] very little pertaining to this system is found in the literature. "Le Chatelier believed that a compound existed of the composition $3CaO.Al_2O_3.Fe_2O_3$, Shepherd, Rankin and Wright observed that $2CaO.Fe_2O_3$ and $5CaO.3Al_2O_3$ reacted; Campbell found that alumina and ferric oxide were capable of replacing each other in certain combinations." At first the studies of Hansen, Brownmiller and Bogue and the discovery of tetra calcium-alumina-ferrite (Brownmillerite) created a way for acquiring a better understanding of iron compounds. To this remarkable combination, however, we intend to return later.

We have already said that in the familiar opinion of the cement experts ferric oxide acts chiefly as a flux. At the same time the use of cements rich in iron in Europe also showed that such cements proved to be more resistant against the attacks of aggressive solutions. This fact was recognized in this country, too, more than thirty years ago. In their United States patent (No. 912,266) of the year 1909 Spencer and Eckel stated that the class of hydraulic cements in which iron is substituted wholly or in part for the alumina will satisfactorily resist the action of sea water and that "during recent years the value for marine use of hydraulic cements of the kind referred to has been fully demonstrated". Iron cement of the oxides composition of silica, 24.6; alumina, 1.35; iron oxide, 7.73; lime, 61.91; and magnesia, 0.79 per cent. has been manufactured in Germany. According to K. Schoch,[4] this cement showed an exceptional resistance to the action of sea water.

In the early 'twenties the Italian cement expert, F. Ferrari, now professor at Pisa, patented the production of a cement whose main characteristic is the content of alumina and iron oxide in equimolecular proportions. As Prof. F. Ferrari states in his United States patent (No. 1,372,015), his investigations of conditions of equilibrium in the system lime-alumina-iron oxide-silica proved that when iron oxide and alumina are in the proportion of their equivalents (159.8-102.2) the said sesquioxides, instead of producing the binary calcium compounds of alumina and iron oxide, "are completely converted into ternary silicates of the form $2\ CaO.\ Al_2O_3.\ Fe_2O_3$ and $2\ CaO.FeO.\ 2\ SiO_2$." The inventor is claiming that this type of cement has many advantages in comparison with the common Portland cement. Its production requires less fuel and its properties exceed in many respects those of standard Portland cement.

At that time Ferrari's invention was rather neglected. However, there are indications in the literature that in several countries manufacturers started to produce this type, but for different reasons its production was suspended.

Quite another type of cement rich in iron was introduced in the cement industry by Prof. H. Kühl a few years later. His cement differs radically from the iron cements. In his American patent (No. 1,594,178) he reveals the reasons for his invention. In fact, he says: "Cements have been produced which were made rich in iron oxide in order to obtain exceptionally high resistance against sea water, but in such cements the increase of Fe_2O_3 was made at the expense of alumina, while the content of silica remained unchanged, or even increased somewhat." The content of alumina is essential because "the initial setting of Portland cement is better the more alumina the cement contains". Considering the fact that Portland cements with high alumina contents become quick-setting in case the silica modulus drops below a value of about 1.8, Kühl overcomes this defect by increasing the iron-oxide content without reducing the content of alumina. The difference between the iron cements and Kühl's cement will be better understood by comparing their oxides composition.

	Iron Cements	*Kühl's Cements*
SiO_2	22 to 23%	14 to 18%
Al_2O_3	1 to 2%	6 to 10%
Fe_2O_3	7 to 9%	5 to 10%
CaO	64 to 66%	60 to 65%

Thus, Kühl's cement may be defined as one that is rich in both alumina and iron at the expense of silica content.

Kühl's cements showed very good tensile and compressive strengths and also good behavior in respect to workability, setting and shrinkage. In the year 1926 this writer made several trial

burnings of mixtures composed according to Kühl's recipes and obtained excellent results. The only obstacles were that the conditions of clinkering were rather difficult on account of the tendency toward caking and the clinker produced was very dense and not easy to grind to the required fineness. The same obstacles were partly responsible for the fact that Kühl's cement, as well as cements of Ferrari's type, did not find larger use in industrial practice. The main reason, however, apparently lay in the fact that the market was satisfied with the Portland cement produced according to the usual rules and the great majority of the European manufacturers did not see any necessity for changing the production procedure. In this country the inventions of Ferrari and Kühl were rather neglected.

Cements with high iron-oxide contents have been produced in this country, but rather unintentionally. A vivid interest in cements with augmented iron-alumina ratios arose, however, several years ago as the result of new problems in the construction of large-mass concrete structures. The manufacturers had to comply with the demands for a cement with reduced heat of hydration. At that time our knowledge of the composition of cement was considerably enriched. A new compound, the tetra calcium-alumina-ferrite, was discovered and its presence in cement was established by the X-ray diffraction method. It has been also established that the compound tricalcium-aluminate generates more heat of hydration per unit than each of the other compounds whose existence in cement have been generally admitted. Thus, by elimination of C_3A, or by a considerable reduction of its content in cement, the total sum of heat of hydration will be decreased. These considerations, together with the application of Bogue's method of calculating the amount of the compounds present in Portland cement from the results of the chemical analysis, created a base for the work of manufacturers.

A special cement has been produced. A higher iron oxide-alumina ratio and a decreased content of lime characterize this type, known as "low-heat" cement. This writer does not intend to discuss in detail this kind of cement; first, because he has already expressed his views on this subject, and does not wish to repeat himself; secondly, because he believes that the use of this cement is limited at present and may decrease in the future. It differs from the proper high-iron cements in having little strength at early ages combined with a slow gain in strength—the result of a very low content of C_3S. It has, in common with high-iron cements, the same difficulties in burning and grinding. The slow hardening of "low-heat" cement resulted in introducing another type of cement, the, so-called "modified" cement, representing a kind of compromise between "low-heat" and standard cements. The "modified" cement generates a moderate rate of heat of hydration and develops moderate strengths. It can not be considered as belonging to the category of iron cements, although its Fe_2O_3 content is slightly higher than that of the average standard cement. In this writer's opinion, "modified" cement does not differ substantially from the standard brands and does not present either a new or a progressive step in the development of the cement industry.

For the last four or five years a renewed interest in Ferrari's cement has been noticed among European cement experts. We mentioned before that, in spite of the excellent properties of this cement, its production has not been undertaken by the manufacturers. This was due to partly the insufficiently advanced technique in burning, partly to a certain conservatism, partly to the fact that Ferrari's theoretical postulates had been refuted, but chiefly to the fact that a pronounced demand for such a cement did not exist.

The development of construction practice in the last ten years created new and special demands. For particular purposes cements of strictly specified properties have been required. The manufacturers were forced to produce several kinds of cement corresponding to different demands and specifications. They only unwillingly accepted this new course, because the production and storage of several kinds of cement has involved considerable difficulties and did not favor the regular continuance of manufacturing. In recent years the Italian, French and German cement press has published a series of articles about Ferrari's cements. It has been related that this type of cement possesses excellent properties regarding strengths, shrinkage, elasticity and workability. It develops a moderate heat of hydration, its burning requires less fuel and, due to its high hydraulic properties, an excessively fine grinding is unnecessary. Dr. Hans Albert, technical director of the Portland-cement factory at Kronstad, carried out experiments on a large scale with Ferrari's cements. His investigations are very interesting and in some respect unique, inasmuch as a part of his work, especially the burning and grinding, has been done in a modern cement plant in a commercial way. Dr. Albert's work[6] proved that cements produced according to Ferrari's principle—*i.e.*, those with an alumina-iron oxide ratio equal to 0.64—show exceptionally good properties. The best results were shown by a cement having a silica modulus equal to 1.47. The calculation of its compounds according to Bogue's method resulted in 75 per cent. C_3S and 25 per cent. C_4AF. This writer finds it unnecessary to give more details of Dr. Albert's remarkable experiments, inasmuch as a comprehensive summary of his work was given by Prof. H. Kühl in this journal about three years ago.[7]

A few months ago Ferrari published supplementary data about his cement.[8] Relating new facts, he emphasizes its universal properties and introduces his cement as one "for all purposes."

Considering the manufacturer's frame of mind regarding the production of several kinds of cement, the writer is not surprised to read Ferrari's statement that many countries have already recognized his type of cement as one which signifies a decisive advance in cement manufacture, and that the more active and progressive producers are making brands of his type instead of standard, high-grade and special cements. This writer wishes to state that, according to his knowledge, cements with alumina-iron oxide ratios equal to 0.64 and sufficient content of high-limed silicates, when correctly prepared, show indeed "universal" properties. He is cognizant, however, of plant experiments in the same direction with less favorable results. Yet he believes that in such cases the preparation of raw mixtures, or the process of burning, or both, were not correctly carried out. Dr. Albert achieved the best results with a mixture having a silica modulus equal to 1.5, but very good results have been obtained in burning mixtures with silica moduli from 2 up to 2.4.

Besides the described cements with augmented iron-oxide content up to the proportion of one part of Fe_2O_3 to 0.64 of Al_2O_3, there are known and produced high-iron cements containing a still larger amount of iron oxide. As a typical example cements containing 1 part of iron oxide to about 0.37 of alumina may be mentioned. Sh. Nagai and K. Matsuoka prepared and tested two brands of this kind. According to the information given by the investigators in a paper[9] presented to the Institute of The Silicate Industry, Tokyo, the compounds composition of these cements, calculated by Bogue's method, was as follows:

Compounds	Brand A	Brand B
3 $CaO.SiO_2$	44.6%	61.5%
2 $CaO.SiO_2$	29.2%	16.7%
3 $CaO.Al_2O_3$	—	—
4 $CaO.Al_2O_3.Fe_2O_3$	12.7%	13.0%
2 $CaO.Fe_2O_3$	5.5%	5.4%

These cements showed good tensile strengths (tested for bending), and very satisfactory results with respect to expansion. In comparison with three other cements—one standard, one blast-furnace slag cement and one mixed Portland cement of the Neo-soliditit type—they generated the least heat of hydration. In the opinion of the investigators, these high-iron cements are suitable for mass concrete.

What *rôle* does iron oxide play in creating favorable clinkering conditions? "Increasing the iron oxide in the raw mix causes, first slowly and then faster, an accelerating increase in the melt phase." It means that, according to our present knowledge, the effect of iron oxide on clinkering can with certainty be determined as that of a flux only. Whether iron oxide also acts as a mineralizer analogous to calcium fluoride, which, when added to the raw mix, reduces the temperature of sintering and facilitates the crystallization, has not as yet been established.

Another problem is presented by the fact that the iron cements, particularly those of Ferrari's type, show such excellent hydraulic properties. According to the generally adopted concept, cements with alumina ratios equal to 0.64 do not contain tricalcium-aluminate. The two sesquioxides combine, forming 4 CaO. $Al_2O_3.Fe_2O_3$. The absence of C_3A is responsible for less heat of hydration. The same reason has been advanced to explain their better resistance to corrosive solutions. Whereas the reasoning regarding the heat of hydration may be basically correct, the explanation of the second case meets some objections.

The effect of iron compounds on the hydraulic properties of cement could be better understood if we knew more about the hydration of calcium ferrite. Y. Sanada[10] found that mono-calcium-ferrites do not produce hydrated matters; bi-calcium-ferrites, however, hydrate slowly; when treated with water in proportion of 1 : 100, after 336 hours only one fourth of their lime content is hydrated. Not long ago, H. Hoffman[11] proved the existence of tetra-calcium-ferrite-hydrate with 7 mol. of H_2O, and A. Eiger [12] prepared $3CaO.Fe_2O_3.6H_2O$ by the action of colloidal hydrate of iron oxide on the supersaturated solution of lime in water. These recently discovered hydro-ferrites of tri- and tetracalcium represent an analogue to the known hydro-aluminates of lime, thus giving a further indication that iron oxide and alumina lime compounds may form similar products during the hydration. As to the tetra-calcium-alumina-ferrite, whose existence in cement favors the durability of concrete in aggressive water, W. Lerch and R. H. Bogue established that its hydration proceeds as shown in the equation:

$$4CaO.Al_2O_3.Fe_2O_3.\times H_2O = 3CaO.Al_2O_3.6H_2O + 3\ CaO.Fe_2O_3.yH_2O.$$

T h u s, tetracalcium-alumina-ferrite forms during the process of hydration the same tricalcium-aluminate whose existence in cement causes the disintegration of cement structures in corrosive water. Obviously, the familiar explanation that the better durability of iron cements is caused by the elimination of C_3A and substitution of it by C_4AF can not be accepted without doubt.

Yet, the better durability of these cements is firmly established. Ferrari recently expressed the opinion that the properties of his cements are due to the influence of C_4AF on the hydrolysis of C_3S, the presence of considerable amounts of tetra calcium-alumina-ferrite promoting this process. His opinion needs further evidence. On the contrary, H. F. Gonnerman's studies[13] of the influence on strength of three groups of cements, each containing approximately the same amount of C_3S, C_2S and C_3A, but variable amounts of C_4AF, showed that C_4AF compound produces little, if any, effect on the tensile strength and rather a negative effect on the compressive strength.

It is generally agreed that iron cement contains all, or nearly all, its iron combined in the crystalline formation called Celite. According to Lea, "The nature of Celite is perhaps less certain since it occurs as one of the interstitial materials between the Belite and Alite crystals, thus rendering its identification difficult. It is clearly a compound containing iron and, since C_4AF is shown by X-rays to be present in cement, it is most probably this compound." [14]

On the basis of his comprehensive studies on Celite T. Yamaushi[15] of the University at Tokyo arrived at the conclusion that the generally-accepted opinion of the identity of Celite with Brownmillerite is still not sufficiently proved. The results of his study on the system lime-alumina-iron oxide indicated the presence of solid solution in this system, and induced him to question the existence of C_4AF in it. He asserts that the high-lime special cements, of alumina-iron oxide molar ratio equal to 1, contain a ferric oxide series compound (as a solid solution), the lime-alumina proportions of which are lower than those of Brownmillerite. B. Tavasci,[16] who a few years ago introduced a new and promising "metallographic" method for the examination of cement clinker, established by means of his method that Celite represents an intimate mixture of two components: the one shows the structural characteristics of C_3A, the other is composed chiefly of C_4AF.

Several years ago this writer prepared a clinker of an alumina-iron oxide ratio equal to 0.64. The burning was carried out in an electric muffle-furnace at 1,350 to 1,400 degrees C. A well-burned clinker was obtained. The chemical analysis showed the following oxides contents: CaO, 64.97; SiO_2, 22.; Al_2O3, 4.01; Fe_2O_3, 6.26; MgO, 1.45, SO_3, 0.46 per cent. The calculation of compounds according to R. H. Bogue results in: 60.1 per cent of C_3S, 17.8 per cent. of C_2S, and 19 per cent. of C_4AF. The microscopic examination of thin sections showed crystalline formations embedded in a dark ground-mass. The greater part of the crystalline formation presented the well-known picture of Alite crystals. At that time this fact did not attract this writer's attention. At present, when the investigation of K. Koyanegi and T. Sudon,[17] as well as the work of W. Eitel[18] indicate that Alite is not identical with C_3S, but comprises a mix-crystal of C_3S and C_3A, the existence of Alite crystal in cement clinker of an alumina-iron oxide ratio equal to 0.64 appears to be in conflict with the postulates with respect to the formation of C_4AF.

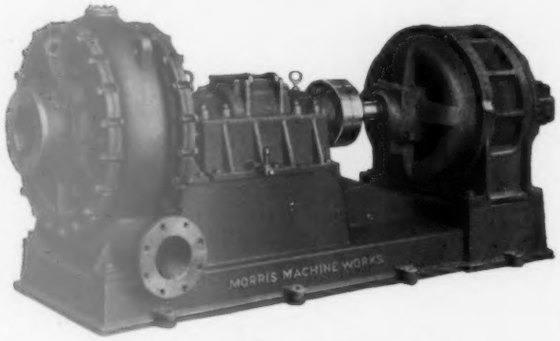
In order to avoid a possible misunderstanding, the writer wishes to say that he does not doubt the existence of Brownmillerite in commercial cements. Its presence has been established in many systems containing combinations of C, A, F and S, and in commercial cements by means of X-ray and metallographic methods as well. However, it must be pointed out that the evidence of the form and extent of its existence is incomplete, just as incomplete as our concept of cement clinker. Twenty years ago cement clinker was considered a mixture of several minerals in solid solution. In addition to the crystalline ingredients the presence of an amorphous substance, the "glassy ground-mass" has been established. A few years ago it had been agreed that "the solid solution theory can be abandoned, and there is no longer any need to refer to Alite, Belite, Celite and Felite, because the principal components of clinker can be expressed in proper chemical terms." The latest studies show that the old concept of solid solutions is not quite dead. It has been found that C_2S dissolves lime, that C_2S forms a solid solution with C_2S, C_3A takes up iron oxide. The mineral Alite —the most important ingredient of cement—contains significant quantities of other compounds in solid solution. C_3A

The MORRIS HYDRAULIC COLUMN

News of interest to Centrifugal Pump Users

How Morris protects dredge pumps from indigestion . . . . .

Hydraulic dredges sometimes operate on deposits containing over-size stones which must be screened out and removed before reaching the pump. Morris has solved this problem by a self-unloading rock trap in which over-size material is made to roll into a flared chute, discharging the large stones through a hand-operated sealed gate below the water level. This device, *which avoids shutting down the pump to remove stones,* is typical of Morris ingenuity in its simplicity and effectiveness. Morris can solve *your* dredging problem too—76 years of experience is at your disposal.



Not merely "adapted to" but *designed for* . . . . .

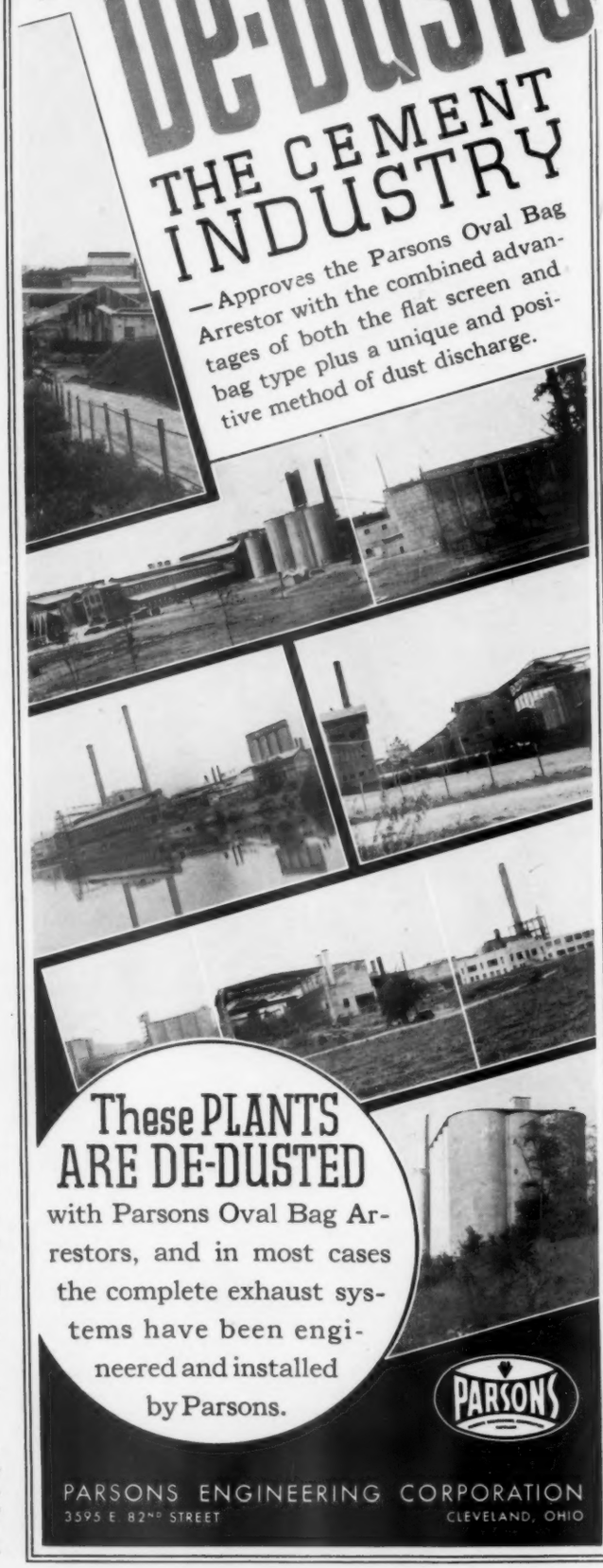
Morris has ten different types of centrifugal pumps for handling abrasive materials such as sand and gravel, cement slurry, etc., and a standard type for every clear water service. Therefore, whatever your pumping requirements may be, you can be sure of an *exactly suitable* Morris design—not merely an "adapted" design. Your benefits are greater production, longer pump life, and lower maintenance expense. Write for bulletin on the Morris design for your needs.

MEMBER

For authoritative recommendations on any pumping or dredging problem, write Morris Machine Works, Baldwinsville, N. Y. Export Office: 30 Church St., New York, N. Y.

PARSONS De-Dusts THE CEMENT INDUSTRY

—Approves the Parsons Oval Bag Arrestor with the combined advantages of both the flat screen and bag type plus a unique and positive method of dust discharge.



These PLANTS ARE DE-DUSTED with Parsons Oval Bag Arrestors, and in most cases the complete exhaust systems have been engineered and installed by Parsons.

PARSONS

PARSONS ENGINEERING CORPORATION
3595 E 82ND STREET CLEVELAND, OHIO

and C_2F form solid solutions of limited miscibility.

Regarding the cements of high iron content, especially these of Ferrari's type, the writer has attempted to show that their properties, in many respects exceeding those of standard Portland cement and at the same time comprising the particular qualities of "special cements," can not be explained on the basis of their compounds composition. He had no opportunity to examine these types of cement in respect to their contents of the "glassy" substance. He also did not find reliable indications about this subject in the literature. It is, however, reasonable to expect that they do not contain "glass" in considerable quantity, being composed chiefly of crystalline matters. The possibility of clinkering raw mixes of alumina-iron contents in equimolecular proportions by lower temperature creates a low melting eutecticum favoring a faster cooling and promoting crystallization. The numerous investigations of Sh. Nagai[19] and his co-workers proved that fluxes (various fluorides) considerably favor the formation of tricalcium silicate. It is quite probable that iron oxide acts in a similar way. This action, which promotes the formation of higher lime-silica compounds, generating the most hydraulic strength, and accelerates the process of crystallization, may account for the excellent properties of iron cements.

References:

[1] Bogue (R. H.). *Constitution of Portland Cement Clinker.* Cem. and Lime Manuf. Jan. (1940), p. 6.

[2] Meade (R. K.). *Portland Cement.* 3d ed. (1926), p. 43.

[3] Journ. Am. Chem. Soc., v. 50 (1928), p. 396.

[4] Schoch (K.). Die *Moertelbindestoffe.* (1928), p. 345.

[5] *Special Portland Cements.* Cem. and Lime Manuf. (1939) May, pp. 91-98.

[6] Albert (H.). *Die Herstellung und Technische Eigenschaften v. Ferrari Zementen.* Berlin (1937).

[7] *Pit and Quarry.* (1937) Nov., p. 59.

[8] Tonind. Zeit. (1939) No. 81, 83, 85. pp. 873, 889 and 900.

[9] Cem. and Cem. Manuf. (1935) Sept., p. 221.

[10] Journ. Soc. Chem. Ind. Japan. (1937), Jan. 16 b.

[11] Zement. (1936) Sept., No. 39, p. 679.

[12] Revue des Mat. de Constr. (1937), July, p. 141.

[13] Gonnerman (H. F.). *Study of Cement Composition in Relation to Strength,* etc. Proc. A.S.T.M. (1934) pt. II, p. 254.

[14] Lea (F. M.) and Desh (C. H.). *The Chemistry of Cement and Concrete.* (2d. 1935), p. 91.

[15] Journ. Ceram. Ass. Japan. (1937) v. 35, No. 34, p. 361.

[16] Tonind. Zeit. (1937) No. 44-45.

[17] Zement. (1939) Sept., pp. 563-569.

[18] Zement. (1938) Aug., p. 471.

[19] Journ. Soc. Chem. Ind. Japan. v. 37, 38, 39. (1934-1936).

Shipments of Feldspar Approach 1937 Peak

The output of crude feldspar in the United States rose sharply in 1939, exceeding in quantity any year except 1937 but the value was less than that in several earlier years, according to the Bureau of Mines.

Sales of ground feldspar, again excluding aplite, advanced to 259,194 short tons worth $2,862,278, as shown in the following table, compared with 214,514 tons valued at $2,466,252 in 1938 and the all-time peak of 279,272 tons valued at $3,486,714 in 1937. Although the tonnage was exceeded in only one year, the value of the 1939 output was less than that of the output in 1936, as well as in 1937.

Imports of crude spar in 1939, all from Canada, were slightly less than in 1938 and much less than in any other recent year except the depression years 1932 and 1933.

Nearly all the states producing crude feldspar shared in the increased activity in 1939. Increases of approximately 35 per cent. were registered in Connecticut, New Hampshire, and North Carolina. Output in California and Wyoming, although still comparatively small, showed large percentage gains over 1938.

PYRASTEEL for high temperatures

for PREPAREDNESS

. . . . against attacks of heat and corrosion. For really substantial economies in cement mill operation, just specify PYRASTEEL for any and all equipment parts, exposed to high temperatures. It is as simple as that, for the extra long service of this heat-resisting alloy reduces costly repairs and replacements, saving thousands of dollars yearly.

DRAG CHAINS

exposed to molten clinker and other hard service, will not warp, break or oxidize if made of PYRASTEEL.

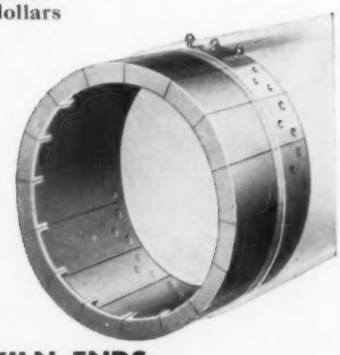
FEED PIPES

straight or curved, should be of PYRASTEEL to resist both heat and abrasion.

Write for BULLETIN

KILN PARTS

Feed Spouts, Retainer Rings, Lifter Bars and Liners, cost less and last longer if made of PYRASTEEL.



KILN ENDS

with segmental construction as above to fit any diameter kiln. Result in remarkable fuel economies.

CHICAGO STEEL FOUNDRY COMPANY

Kedzie Avenue at 37th Street Chicago, Illinois

Makers of Alloy Steel for 30 Years

LOW COST PER HEAT HOUR FOR HIGH TEMPERATURE SERVICE

The VANDERWERP RECUPERATOR

View of Recuperator Looking into Kiln Showing Quick Air-Quenching Action on Clinker

for Rotary Kilns

- Improved Quality of Cement
- Better Grindability
- Maximum Fuel Economy
- Highest Heat Recovery
- Lowest Maintenance
- Simplest Construction
- Minimum Floor Space
- Moderate First Cost
- Lowest Erection Cost

The Vanderwerp Recuperator is built to four standard designs meeting every possible performance and installation requirement.

It is highly successful on kilns burning coal, natural gas and fuel oil.

The underlying principle of heat exchange inside the kiln insures maximum thermal efficiency with immediate air-quenching effect at the greatest temperature differential between the clinker and the cooling air.

The large number of Recuperators in operation has resulted in recent refinements in design and even further reduction of maintenance expense, already low.

Write, without obligation, for full particulars.

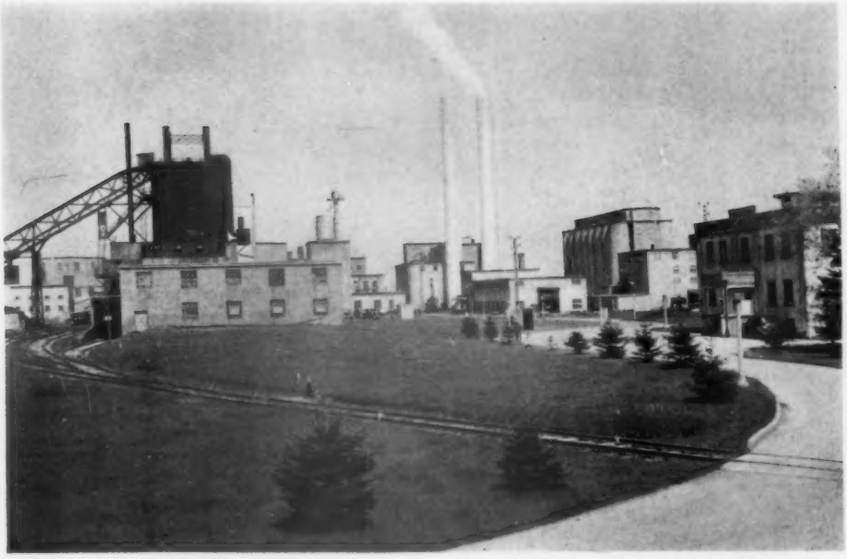
MANITOWOC ENGINEERING WORKS

Division of

Manitowoc Ship Building Company

GENERAL OFFICES AND PLANT
Manitowoc, Wisconsin

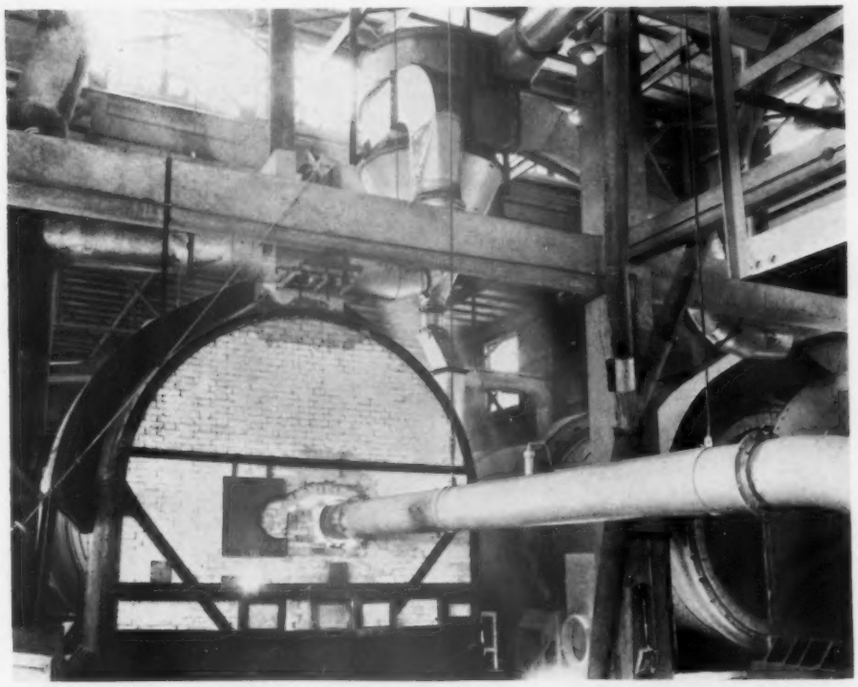
CHICAGO OFFICE
131 E. Wacker Drive



Operations of Lawrence Portland Cement Company at Thomaston, Maine, with cement plant in left foreground.

Lawrence Improvements Reflect Gains in Operating Efficiency

ANOTHER of the many cement companies which have recently taken steps to improve operating efficiency and lower operating costs is the Lawrence Portland Cement Company, with plants at Northampton, Pennsylvania, and Thomaston, Maine. The Northampton plant is the older of the two and few important improvements had been made in it since it was enlarged in 1925. The installation of three 16-foot Sturtevant separators in the finish-grinding department has just been completed. Also installed were the necessary screw conveyors and elevators to connect these separators with nine tube mills with which they are in closed circuit. The three Bradley preliminary mills in this department are in closed circuit with twelve vibrating screens. The plant at Thomaston, which was built in 1928, is the only cement plant in New England. In 1930 slurry filters were installed primarily to lower fuel consumption. The 3-compartment finish-grinding mills were converted into 4-compartment mills in 1932. In 1935 two Richardson scales were installed ahead of these mills. In 1937 two more Richardson scales were installed in the coal-mill department between the drier and the two coal mills.



The cyclone which removes dust from drying air for coal mill. Connections for second kiln are shown at right.

Because of the great distance from this plant to the nearest source of suitable coal supply the delivered price of coal there has always been nearly double that paid by producers in the Lehigh Valley. This has made it imperative to keep fuel consumption at the lowest possible level. With this in mind the company in April, 1940 put in operation a Raymond No. 45 direct-firing bowl mill on one of its two 11-by 200-foot kilns. The mill and its fan are driven from the same shaft by a 100-horsepower Westinghouse motor.

The installation of this mill has already improved conditions in many ways. The capacity of the kiln has been held at the former level of about 1630 barrels daily, but coal consumption is estimated to have been cut at least 10 per cent. below the former level of about 115 pounds per barrel. No. 3 federal slack coal with a 13,700 B.t.u. rating and 6 per cent. ash content is used. A more evenly-burned and smaller-sized clinker with better grindability is being obtained. The high maintenance cost of the old system has been eliminated and one man in 6 hours daily now does the work formerly done by four full-time workers. Among other troubles eliminated by the new system was the occasional flooding of the old coal feeder.

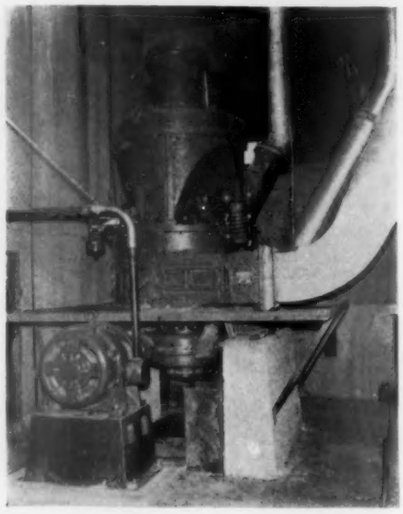
When starting up the kiln and mill primary air is drawn from the top of the kiln hood but after the kiln is warmed up it is drawn from the cooler stack. This air is drawn through a 5-foot Raymond cyclone which removes the dust, and automatic dampers keep the air temperature in the mill between 260 and 350 degrees F. These dampers vary the blending with air at atmospheric temperature as necessary to keep the primary air temperature at the burner at 180 degrees. Formerly air at atmospheric temperature, averaging 55 degrees, was used. Finer grinding of the coal has also helped to promote better combustion. Formerly 80 per

cent. was retained on 100 mesh. Now 0.5 per cent. is retained on 50 mesh, 6 per cent. on 100 mesh and 16 per cent. on 200 mesh. The lower moisture content of the pulverized coal, now less than 1 per cent., is also a factor. Kiln burning temperatures are being maintained at 2750-2800 degrees F. A Brown recording pyrometer is connected to the feed end of the kiln and the stack base and temperatures at these points are kept at about 1400 and 1200 degrees respectively, to insure against secondary combustion.

The coal-handling system is much the same as before. Coal is discharged from cars into a track hopper and a series of belt conveyor, bucket elevator and belt conveyor feeds it to the 31-ton Raymond mill feed bin. This system bypasses the crusher, drier, elevator, bin and mill in the old system which are kept in usable condition.

The new mill was installed at ground level under the burner floor primarily in order to give it a solid foundation. One of the Richardson scales from the old coal mill was installed under the coal bin and the Raymond mill feeder is also on the burner floor. A glass door has been installed in this feeder so the burner can judge the amount and quality of the coal going to the mill.

Although installed to serve the No. 2 kiln, this mill can also be connected to the No. 1 kiln at any time. The necessary coal line has been installed



The new direct-firing coal mill installed under the burner floor.

and an air line connecting this kiln and the cyclone can be quickly put in place. When business warrants operation of both kilns a second mill will be installed.

The coal scale and feeder with coal pipe from mill in foreground.

Superior Erects New Type of Sack-House

The Superior Portland Cement Company is building a new sack-house at its plant located at Concrete, Washington. The building, a combination of one and two stories, is 192 feet long and 31 feet wide. It is of reinforced concrete construction. An unusual feature is the precast concrete roof, which employs cellular girders with precast ribbed spans, carried on cast-in-place concrete columns and monolithic spandrel beams.

To help SOLVE YOUR DRIVE PROBLEMS

Bradley Hercules mill driven by Jones speed increaser from synchronous motor.

Jones double herringbone reducer on kiln drive in cement plant.

Jones double herringbone reducer cement mill elevator head shaft drive.

WHEN you have a drive problem that calls for a speed reducer, don't overlook Jones. All that we ask is an opportunity to present the features of Jones Speed Reducers and other transmission products that have caused them to be selected for so many applications in rock product plants. The accompanying illustrations are typical of the Jones drives that are to be found in cement plants.

Before you decide on your next speed reducers, we shall appreciate the opportunity of assisting you in the selection of drives to meet your specific requirements.

W. A. JONES FOUNDRY & MACHINE CO.
4441 Roosevelt Road, Chicago, Ill.

ANY, OR ALL, OF THESE JONES CATALOGS WILL BE SENT ON REQUEST

No. 70—Jones Herringbone Speed Reducers
No. 71—Jones Cut and Molded Tooth Gears
No. 75—Jones Worm Helical Speed Reducers
No. 55—Jones Spur Gear Speed Reducer Units
No. 68—Jones Worm Gear Speed Reducers
No. 60—Jones Lemley Friction Clutches
No. 58B and 76—Jones V-Belt Sheaves
No. 78—Jones Flexible Couplings (4 pages)
No. 56—Jones Roller Bearing Pillow Blocks
No. 69A—Jones Cast Iron Pulleys
No. 61—Jones Power Transmission Equipment

Jones
HERRINGBONE—WORM—SPUR—GEAR SPEED REDUCERS
CUT AND MOLDED TOOTH GEARS • V BELT SHEAVES
ANTI FRICTION PILLOW BLOCKS • PULLEYS
FRICTION CLUTCHES • TRANSMISSION APPLIANCES

STRONG-SCOTT SATISFIES ANOTHER CUSTOMER

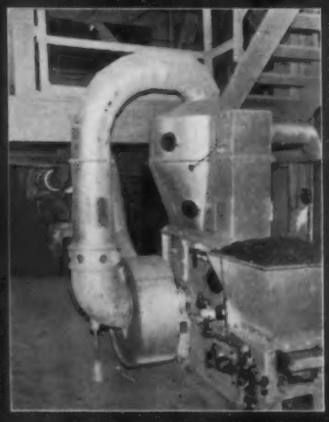
NAZARETH CEMENT COMPANY

PORTLAND NAZARETH CEMENT

GENERAL OFFICES NAZARETH, PA.

discards outmoded kiln-firing methods and goes modern with TEN new UNIPULVO PULVERIZERS

Upper picture shows kiln-firing aisle before the modernization program was begun. Lower pictures show unit pulverizers firing 8 kilns. Not shown, are two smaller machines firing rock driers. Simple in design, easy to operate, cheap to maintain, STRONG-SCOTT pulverizers make more uniform clinker — day in, day out — and more of it. Patented, exclusive features make these results possible.



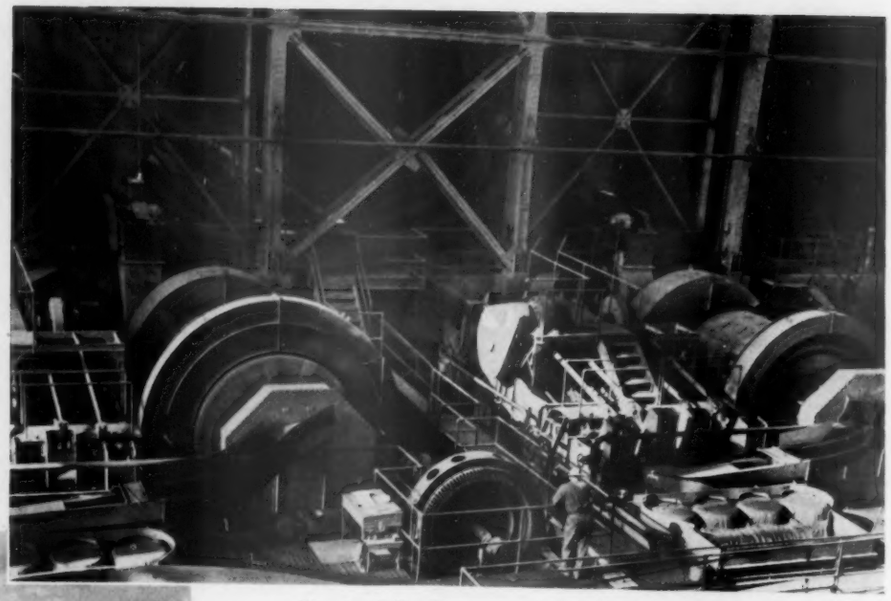
Manufactured, Installed and Guaranteed by

THE STRONG-SCOTT MFG. CO. • MINNEAPOLIS, MINN.

THE DORR C. C. G. SYSTEM at

ADVANTAGES OF DORR C. C. G. . . .

- Less Power for Raw Grinding
- Less Consumption Balls and Mill Liners
- More capacity per mill
- No coarse, stray oversize in slurry
- More uniform slurry—chemically and physically



Step 1—Ball mills in closed circuit with Dorr Classifiers.

Step 2—Dorr Thickeners concentrating classifier overflow to slurry density.

Step 3—Dorr Slurry Mixers correcting the thickened slurry ahead of the kilns.

DORRCO

PERMANENTE'S NEW MILL

These pictures of the latest installation of the Dorr C.C.G. (Closed Circuit Grinding) System were taken recently at the new 12,000 bbl. plant of The Permanente Corporation, Simla, California.

The Dorr System not only helps to give a better finished product but pays for itself in a few years out of power and other savings. A recent 4,000 barrel installation* requires only 3.58 KW hrs. per barrel for grinding from 1 inch to 90 per cent. through 200 mesh—about half the average for the industry.

Eight installations of this system have been made in the last ten years. You can't afford to overlook it if you are about to build a new plant, modernize an old one or shift from dry to wet processing.

** A complete 15 page technical report on Dorr C.C.G. at this property will be sent on request—flowsheets, operating data, cost analyses, etc.*

THE **DORR COMPANY** INC.

ENGINEERS • 570 Lexington Ave., New York

ATLANTA • TORONTO • CHICAGO • DENVER • LOS ANGELES

DORR TECHNICAL SERVICES AND EQUIPMENT ARE ALSO AVAILABLE FROM THE FOLLOWING COMPANIES:

NETHERLANDS: Dorr-Oliver N.V., The Hague • ENGLAND: Dorr-Oliver Company Ltd., London • GERMANY: Dorr Gesellschaft, m.b.H. Berlin • FRANCE: Soc. Dorr-Oliver, Paris
ITALY: S.A.I. Dorr-Oliver, Milan • JAPAN: Sanki Eng. Co., Ltd., Tokyo • SCANDINAVIA: A.B. Hedemora, Hedemora, Sweden • AUSTRALIA: Crossle & Duff Pty. Ltd., Melbourne
ARGENTINA: Luis Fiore, Buenos Aires • SOUTH AFRICA: Edward L. Bateman Pty. Ltd., Johannesburg • BRAZIL: Oscar Taves & Co., Rio de Janeiro

SECONDARY BLASTING OR GRAVITY BREAKER?

By "CALX"

ONE of the most interesting developments of recent years in quarry practice is the successful application of the gravity rock breaker. This device fills a long-felt need, and, as quarrymen realize its possibilities, it will undoubtedly be widely adopted.

The procedure followed in most quarries after the primary blast involves the relaying of the air lines, which have been temporarily removed, to prevent damage resulting from the "big shot"; the drilling and breaking ("pop-holing" to you) of the rocks which are of a size too great for shovel or hand loading; and then the "moving in" of shovels, cars or trucks, and men. The loading of the broken rock begins while the chatter of the jackhammer drills continues endlessly, drilling or "plugging" all the rocks which are obviously too large for handling. Meanwhile, the shovels proceed with the loading, casting beside or behind them the "hard heads" too big for loading. Finally, everything has been drilled and the holes loaded for firing, and at a signal from the quarry boss the shovels are moved back to a safe distance, their backs turned in the direction of the blasting.

The blowing of the quarry whistle signals "time to start lighting," and the wild scramble begins. Often a hundred or more shots are to be fired, so that it is necessary for every available man to grab a red-hot iron, miner's lamp, or, too often, ordinary matches, and dash for the group of fuses allotted to him. If the man has mountain-goat blood in his veins, he is likely to light his last fuse before the warning cap explodes, telling him "time's up and run for it." However, most of them fall and stumble over the rough pile under the need for speed and the excitement of the occasion. There is never any way of knowing definitely that every charge was lighted, and often some charges are missed in the confusion, and these, when found, must be fired in a second installment, requiring additional time and loss of output. Often a flying spall from one of the first shots will have cut or damaged the fuse of one of the last-lighted holes, so that it is not unusual for a rock containing a charge of explosive to be shoveled into cars and later into crushers and kilns, and in at least 117 like instances, has actually to find its way into the purchaser's hands, who is more than likely to be inexperienced in the handling of undetonated charges. After finishing his hazardous job the quarryman crouches in a shelter, usually at safe distance, and tries to count the explosions for the purpose of knowing that all the holes are accounted for. This business of counting explosions, especially when they occur simultaneously or in too rapid succession, is next to impossible, and the result is generally unreliable.

Finally, the prescribed time having elapsed, the quarry whistle sounds the "all-clear" signal, and the men return to the working face to examine the effect of the blasting. This is a time of great hazard, and more men have been killed at this juncture of the secondary-blasting cycle than in any other phase of it. Delay, which has not been accounted for, has on many occasions timed a blast so that it occurred just as the men were examining the results of their shooting. While the shovels are moving in for the resumption of loading operations, an attempt is made —usually by hand—to remove the fragments of rock which were thrown about by the blasting and scattered all over the quarry floor; otherwise, the working level will soon be very unsightly, and, if this condition is allowed to continue, the floor will become almost impassable.

Well, the shovels are loading again, and again the men and equipment adjacent to the quarry workings resume their regular duties. The crushers groan, the screens rattle, and the dust usually indicates that the plant has got under way again. Many quarrymen say "It takes us only 15 minutes to shoot," but experience and time studies indicate 30 to 40 minutes. And the delay is not confined to the quarry; everything on the property usually feels the retarding effect of the secondary blasting. In some of the more up-and-doing quarries much effort has been made to blast at the noon lunch period and again at quitting time, but such fine timing is extremely difficult, so that for all practical purposes we are safe in saying that there are at least two such secondary-blasting cycles daily in most quarries, and, with the trend toward the 8-hr. work day, a surprising percentage of available time is thus occupied.

With the advent of the gravity breaker the entire picture changes. After the primary blast, instead of sweating men dragging the air hose and jackhammers over the pile in a speedy effort to drill and blast the oversize rocks which must be broken before the shovels can move in, the crane moves in, and after a few well-directed "drops" the breast is ready for the shovels. As the loading proceeds, as is to be expected, "big ones" are encountered. They are moved behind or alongside the shovel, and laid to the best advantage for breaking. Wonderful team work develops with experience. The operator of the breaker has become so skillful that he rarely misses a drop, and, when that 3-ton ball hits, the result is not spread all over the quarry floor, but is found right where it belongs and in sizes suitable for loading.

Furthermore, he has learned to throw his ball. Just as a skillful operator of a clam-shell bucket can land on a remote spot with unerring skill, so can the operator of the breaker work wonders on the rock pile. Then again, when the breast is standing so straight, a roll, which may endanger a shovel, is often brought down by swinging the ball into the keystone, or he will throw his ball into a loose rock hanging on the quarry face and bring it down without the danger which accompanies sending a man down in a sling or working with a bar from some unsafe position. During the winter months, when the top of the rock pile is apt to be crusted to a considerable depth with frost, the ball can often reach well beyond the range of the dipper, and a disagreeable condition is corrected.

There is no moving back of the shovels to avoid the blast, no drilling and loading, no wild scramble over the breast to light the squibs, no dynamite, no danger, no delay, no consumption of compressed air and power. The jackhammers, the oil-soaked leaky air hose, the blacksmith's time dressing the bit and shanking the drill steel, the wear on the shovel treads from long moves, are all agreeably absent, and secondary blasting becomes extremely rare, sometimes disappearing entirely. The quarry and the plant work through without interruption, and at the end of the work day the output by comparison will be noticeably greater.

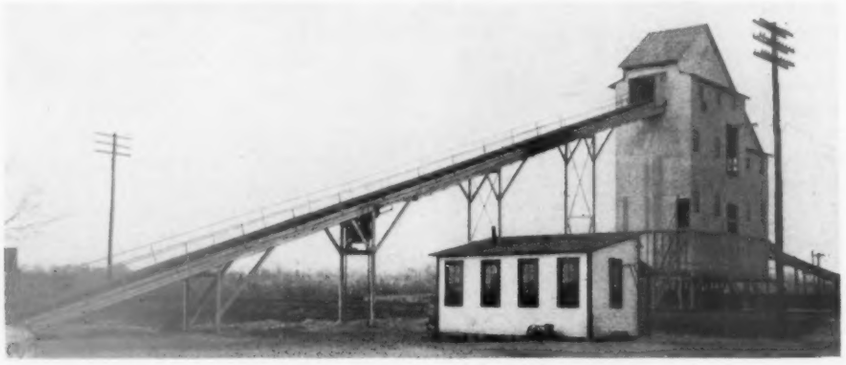
For years many lime producers, who burned in vertical kilns, have avoided hard shooting and secondary blasting

(Continued on page 76)

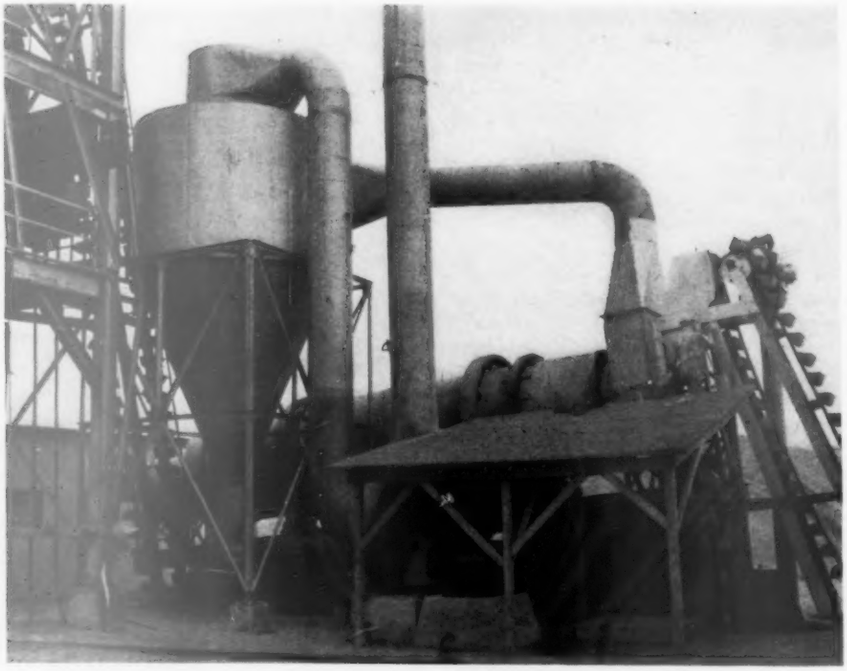
Gravel Pioneer Expands Scope of His Operations; Enters Related Fields

MANY old friends of J. D. Roquemore will be interested in the details of his latest ventures in this field. As a pioneer in the sand-and-gravel industry in the South he gained a wide reputation as one of the most progressive producers in the country, and his modern operations in and near Montgomery, Alabama, were on several occasions described in these pages. During the depression years Mr. Roquemore was forced to curtail his operations somewhat but is now again back in the swing with a new sand-and-gravel plant, a new asphalt plant and a ready-mixed-concrete plant under construction which will complete one of the most modern materials-production combinations in the South.

Mr. Roquemore's first venture into the commercial production of sand and gravel was in 1902. Since then the Roquemore Gravel Company enlarged and expanded its operations. An article in the September 11, 1929 issue of PIT AND QUARRY described the company's new 80-car-per-day gravel plant at Flomaton, Alabama, near the Florida line, the Montgomery plant which was said to be the largest in the South with a capacity of about 350 cars daily, and the new Montgomery plant of its subsidiary, the Alabama Sand & Gravel Company which had a capacity of 100 cars daily. An article in the August 10, 1932, issue of PIT AND QUARRY described the new 150-ton-per-hour slag plant built by the Roquemore Gravel Company at Bessemer, near Birmingham.



The new sand-and-gravel plant with conveyor from track hopper at left.



The cooler-drier in the bituminizing plant. Cyclone and fan in foreground.

Now known as the Roquemore Gravel & Slag Company, this firm produces sand and gravel on a smaller scale at Flomaton. The production unit is a 10-inch dredge powered by a Caterpillar Diesel engine. A Byers 83 gasoline crawler convertible crane-dragline is used with ¾-cubic yard buckets for loosening gravel in the deposit and for stock-piling. Its capacity is about 20 cars of material daily, most of which is shipped to points along the Gulf coast.

In 1938 a new sand-and-gravel plant, with a capacity of about 80 cars daily, was built 3 miles north of Montgomery, replacing the old plant on the same deposit.

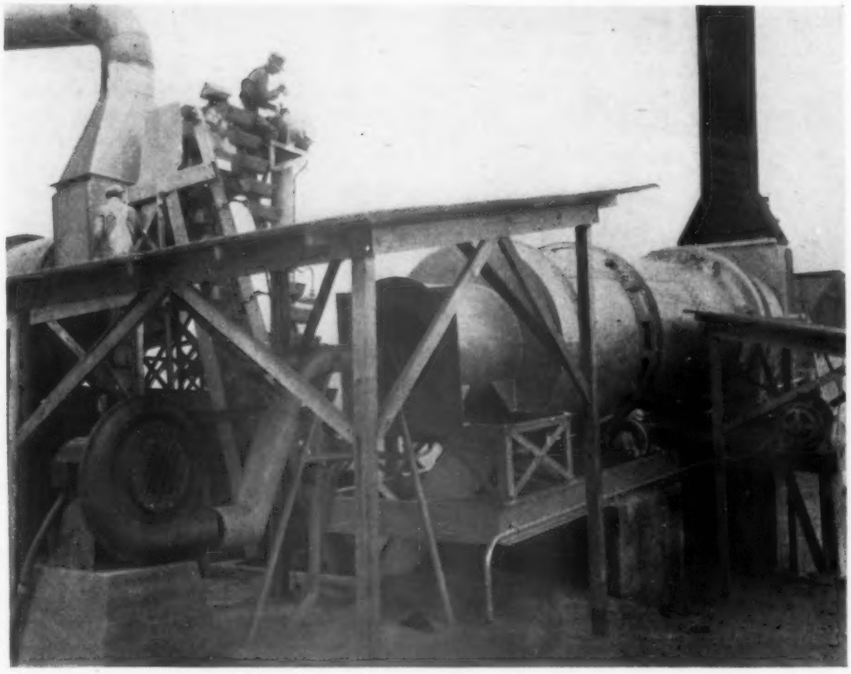
Early in 1939 the company ventured into a new but closely-related field by putting in operation the new Cedar Rapids hot-or-cold mix asphalt plant with which this article is chiefly concerned.

At about the same time a temporary ready-mixed-concrete batching plant was put in operation at the same site to serve a fleet of six 1½-cubic yard Chain Belt Rex truck-mixers. Two Jaeger truck-mixers have been added since. Construction is now under way on a permanent Butler Bin Company batching plant with a bulk-cement handling system. The completed yard will have a modern tunnel belt-conveyor system for reclaiming aggregates from storage to the asphalt and concrete plants. These aggregates will be delivered in cars from the washing plant about ½ mile away.

The aggregate-bituminizing plant is the latest all-purpose type Cedar Rapids plant. Rated conservatively at 100 tons per hour, it has actually produced as high as 150 tons of cold mix per hour.

Temporarily this plant is being fed from stock-piles or direct from cars by a locomotive crane through a plant hopper. A pan-conveyor feeds the material through a chute to a bucket-elevator feeding the 6- by 24-foot Cedar Rapids rotary drier which is direct-fired with natural gas through a Maxon

The new aggregate-bituminizing plant with boiler house and bitumen tanks at left.



The drier, showing gas burner and blower. Men at left are painting up for season's run.

Premix burner with a Buffalo blower. A Foxboro thermometer indicates the temperature of the stone leaving the drier. When producing cold mix the dried material is discharged to an elevator feeding a 6- by 24-foot Cedar Rapids rotary cooler. Cooling air is drawn out of the cooler through a 10-foot cyclone by a No. 60 American exhaust fan. The collected dust passes through a Fuller rotary valve to a screw-conveyor feeding the bucket-elevator which carries the drier product to the plant storage bins.

When producing hot mixes, the drier is by-passed and the cooler is used as a drier. The pan-conveyor under the hopper feeds the aggregates on a belt-conveyor which carries them past the drier to the elevator feeding the cooler. The cooler has a brick-lined combustion chamber and a concrete footing is in place for the burner and blower used on the regular drier. Later when there is more demand for hot mixes another burner and blower will be purchased.

The plant elevator discharges the dried aggregate on a 42-inch by 10-foot Cedar Rapids Symons 2-deck fully-inclosed screen. The separated sizes of aggregates are discharged into four steel bin compartments with a combined capacity of 50 tons.

Bitumen is received by railway in tank cars and is stored in three 10,000-gallon tanks in a building. These tanks are heated by steam coils at their discharge points just enough to make their contents flow by gravity into a superheater. Steam coils here raise the bitumen's temperature to the desired point after which one of two Roper 4-inch steam-jacketed rotary gear-type pumps feeds it through jacketed lines to the batching floor. The other pump is used for unloading cars.

The bitumen is weighed in a 50-gallon vertical cylindrical tank which is connected to a Kron dial scale. From this tank it flows into a spreader which feeds it into the side of the 4,000-pound capacity steam-jacketed Cedar Rapids pug-mill mixer.

The liquefier used in making cold mixes is stored in a 1,000-gallon underground tank and is pumped to the batching floor. A Brayer Instrument Company automatic meter is set for the desired amount and the surplus flows back into storage. The meter automatically resets itself for each succeeding batch.

Hydrated lime for use in cold-mix surfacing is stored in sacks in a small building and is fed by elevator into a storage bin on the batching floor. From this box it is fed manually to the mixer.

Aggregates are discharged from their bins through lever-operated gates into a 5,000-pound weigh-batcher equipped with Kron dial scales. The batch is discharged through quick-opening gates into the mixer. The temperatures of the aggregates in the bins and of the asphalt in the bucket are indicated on Foxboro thermometers on the batching floor for the operator's guidance when producing hot mixes. The mixer discharge gates are operated by a steam cylinder.

The products of this plant are shipped all over the southern part of Alabama and into bordering sections of Georgia, Florida and Mississippi. Railway shipments are made to the

Inclosed vibrating screen on top of plant with elevator from cooler.

more distant points. Deliveries are usually made by trucks only to Montgomery and near cities and towns, although such deliveries have been made to points as far as 160 miles away. Much of the output is sold to municipalities for repair and resurfacing of existing roads and streets.

The steam used in these operations is generated by a 150-horsepower Scotch Maine boiler taken from an old drag-line. It is in a building which is also used as a repair shop and garage.

The mixer is driven by a 60-horsepower motor through a Falk reducer and chain. The drier and cooler are

The plant hopper and feeder with drier and cooler in background.

separately driven through Falk reducers and gears by 30-horsepower G. E. motors. The burner blower is driven by a direct-connected 30-horsepower Wagner motor and the cooler-exhauster through Gates Vulcoropes by a 40-horsepower G. E. motor.

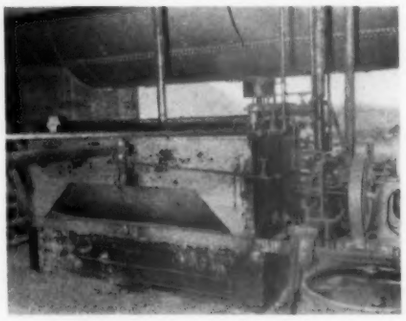
The company's sand-and-gravel production methods differ little from those used in the old plant. The deposit is excavated to a depth of 40 feet by a Bucyrus-Erie 24 steam dragline with a 5-cubic yard bucket. Trains of 12-cubic yard Western side-dump cars are hauled to the plant by an American 25-ton steam locomotive. The aggregates are discharged over a rail grizzly into a 60-cubic yard track hopper. The

This view shows the aggregate-gate levers and batcher, the liquefier meter, bitumen weighing tank and scale.

View looking up inside the open mixer-discharge gates.

man who dumps the cars also operates a lever controlling the gate through which material is discharged from the hopper on a 30-inch by 250-foot Robins belt-conveyor running to the top of the plant. Hewitt conveyor belting is used.

The material is discharged from the conveyor into a box along with a jet of water from a 10-inch pipe. The water and material flow into a 30-foot long revolving screen with 8 feet of scrubber section followed by 22 feet of Hendrick



The superfeeder and plant-feed pumps under the bitumen-storage tanks.

perforated plate. The two jackets on this screen are 16 and 15 feet long and Hendrick perforated plate is used on these also. A spray pipe extends the full length of the screen.

Three finished sizes of gravel are usually produced and these go direct into bins. The fine gravel retained on the outer jacket goes to two 4- by 10-foot 2-deck Niagara vibrating screens which separate the aggregate into various sizes.

The sand passing through the outer jacket of the revolving screen flows with the water over two 4- by 8-foot inclined stationary screens. Wire cloth with $\frac{5}{16}$- by 1-inch openings is used to make concrete sand and No. 10 by ½-inch perforated plate is used for plaster sand. Engine sand can be made with a 3- by $\frac{5}{32}$-inch screen. Pebbles rejected from the sand screens are loaded direct into cars for sales as ballast or they are discharged into a waste pond. An 8-inch Amsco pump transfers the pebbles through a pipeline to a waste pile.

The six 75-ton steel bins for four sizes of gravel and two of sand are located over three loading tracks. Cars are loaded through sliding gates operated by levers from loading platforms.

"Calx" (from page 73)

as far as possible, believing that the hard jolt thus received opened or weakened invisible seams in the grain of the rock, so that upon exposure to great heat, especially if 3 or 4 per cent. of moisture is present, would cause spalling or splitting often sufficient to lessen or block the draft in the kiln. To them great benefit should accrue.

Of course, there are savings and substantial ones, too. However, no attempt will be made to describe the economies as they will vary with local conditions and the efficiency of the application. It should be mentioned, however, that practically every experienced quarry man will be skeptical of the gravity rock breaker, and among the workmen there will be a noticeable tendency to laugh it off as just "another of the boss' crazy schemes." But, with experience and some perseverance, the most skeptical will be convinced. It is not the intention to claim satisfactory results on all rock, regardless of its hardness, but, with a French coëfficient of from 6 to 10 experience has proved highly gratifying.

Preferably, the crane should be powered with a gasoline or Diesel engine. Steam power is not desirable for the same reasons that gasoline and electric power have largely replaced it on most jobs. Furthermore, the dragging of the cable for an electrical crane is not all that could be desired, especially where it has to cross tracks and roadways. To be most satisfactory the crane should operate on a continuous tread and should be fast and easily movable; the boom should be not less than 50 ft. long and should be easily adjustable with power; the breaker should weigh at least three tons; and the all-important feature is the attachment between the ball and the hoisting cable. If this is not properly designed, the ball when it rolls over will often break loose from its fastenings. Furthermore, spinning of the cable will prove costly unless a swivel is used. The operator should work behind a screen, and every workman in the vicinity should wear approved eye protection because fine spalls are likely to fly from the impact upon some types of rock.

PERSONAL MENTION

W. F. NETZEBAND has resigned as engineer for the Tri-State Zinc & Lead Ore Producers' Association, at Picher, Oklahoma, to become plant superintendent for the Silica Products Company, Inc., of Batesville, Arkansas. The company has two plants for processing silica sand.

BURT H. BEVERSTOCK has been made vice-president in charge of sales of the Standard Portland Cement Company of Painesville, Ohio. He will maintain offices in Cleveland.

A. G. Forssell

A. G. FORSSELL has been appointed vice-president and general manager of Morris Machine Works, builder of centrifugal pumps and dredges, succeeding J. L. Lonergan, resigned. Mr. Forssell has been with the company for eighteen years, serving as chief engineer and second vice-president. Before joining the Morris organization he was with the United States Lines where he was operating engineer at sea. He is one of the country's authorities on dredge pumps.

DONALD B. PRICE, technical engineer with the Ash Grove Lime & Portland Cement Company at Omaha, for the past two and one-half years, has resigned to enter the construction business at North Platte, Nebraska, where he has purchased an interest in Building Service, Inc. He formerly was chief engineer for the Platte Valley Public Power and Irrigation District in Nebraska and served for several years as District Engineer at Lincoln for the Portland Cement Association.

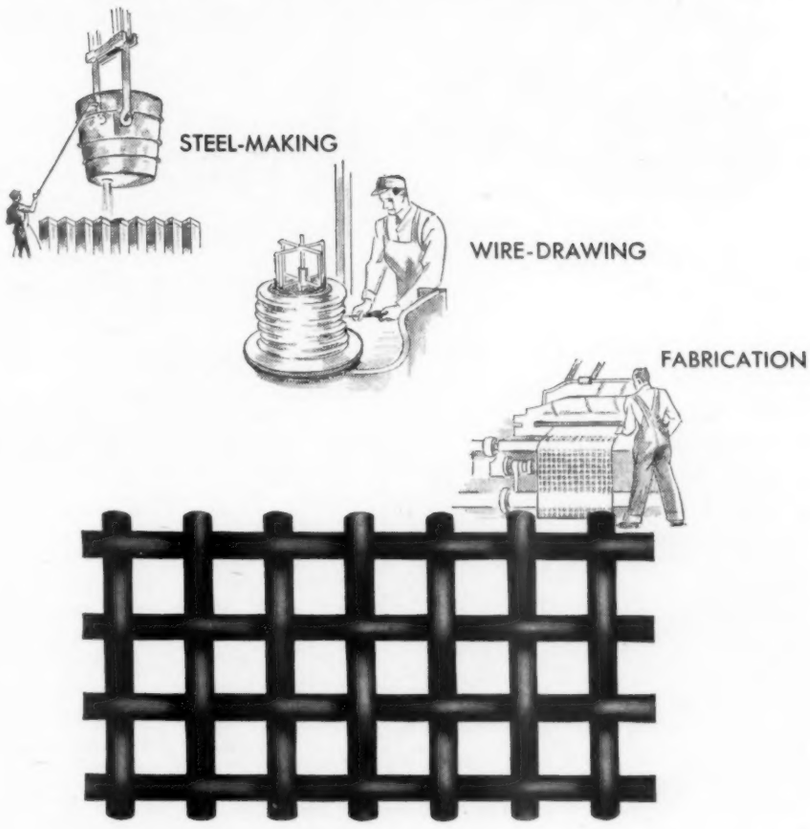
EDWARD OLSEN of the Badger Concrete Company, Oshkosh, Wisconsin, has been elected a director of the Central Wisconsin Association of Credit Men.

A. C. SUHRE is establishing the Bend Sand & Gravel Company, at Bend, Oregon.

TO ASSURE

LONG SCREENING LIFE

ROEBLING CONTROLS EVERY STEP



NO STONE is left unturned to make certain that from Roebling "Abraso" Wire Screening you will get the utmost of enduring, economical service.

For example, Roebling controls every step in the manufacture of Roebling Wire Screening—steel making, wire drawing and fabrication.

This means, first of all, assurance that Roebling "Abraso" Screening is made of steel that will offer maximum resistance to the BEATING of stone and gravel screening service. Secondly, that a full measure of extra toughness will be acquired by this steel—through Roebling's special wire drawing methods. Third, that the wire will be fabricated in Roebling's own mill—to assure use of uniformly high quality steel wire throughout, accurate mesh, and maximum strength of finished wire fabric.

Ask our nearest office to show you how Roebling "Abraso" Wire Screening is saving money for stone and gravel plants.

JOHN A. ROEBLING'S SONS CO.
TRENTON, N.J. *Branches in Principal Cities*

ROEBLING ABRASO SCREEN

TRADE JERSEY MARK

NEARLY 100 YEARS OF WIRE MAKING SPELLS THE DIFFERENCE

THERE'S NO CRIMPING WITH THIS CLIP — IT GRIPS LIKE A FIST!

The Laughlin drop forged Safety Clip grabs wire rope with a grip like a fist—a vise-like, solid clench that *stays put*. When removed, it leaves the wire rope straight, uncrimped, ready to use again.

FOOLPROOF. Laughlin Safety Clips are easier and safer to apply. They can't be put on wrong. No fussing or waste of time. And three Laughlin Safety Clips will do the job of four ordinary U-Bolt Clips.

DOUBLED EFFICIENCY. Tests recently made by a leading engineering school prove Laughlin Safety Clips 50% more efficient than ordinary U-Bolt Clips.

FREE BULLETIN TELLS MONEY-SAVING FEATURES OF LAUGHLIN SAFETY CLIPS

These tests are described in a new booklet — which also gives other advantages to be gained by using Laughlin Safety Clips. Fill out the coupon below — and mail today. No obligation.

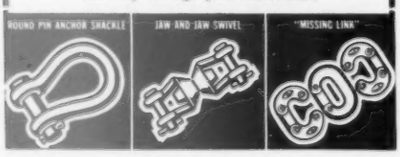
THE THOMAS LAUGHLIN CO.
Portland, Maine

Please send me free Safety Clip booklet P-6.

Name .....
Company .....
Address .....

Check here for catalog on items below ☐

Look for Laughlin products in Thomas' Register and buy through your distributor.



STANLEY M. MERCIER has been appointed chief engineer, conveyor division, of the Jeffrey Manufacturing Company, Columbus, Ohio. Born and educated in England, Mr. Mercier has enjoyed a varied experience in industrial and construction engineering, design and sales, and has been associated with some of the outstanding construction operations in the country during the last decade.

HERMAN NAGEL, manager of the Erie Stone Company's plant at Huntington, Indiana, until its recent sale to the France Stone Company, has gone to Greencastle, Indiana, where he has become superintendent of the Ohio & Indiana Stone Company's plant and quarry.

FRANK J. MALECKI, coal dealer at Michigan City, Indiana, is opening the first ready-mixed-concrete plant in that city. The batching equipment is located on a Pere Marquette Railroad siding.

L. R. BRANTINGHAM, of St. Joseph, Arkansas, has awarded a contract to the Steel Manufacturing Company, of Ottawa, Kansas, for machinery which is to be installed in a lime plant at Mercer, Arkansas.

RALPH G. SPENCER, 64, widely known in the Ohio lime industry, died recently in a hospital at Findlay, Ohio. He helped organize the National Lime & Stone Company in 1902, retiring four years ago.

FREDERICK V. PARSONS, 57, sales manager of the Volunteer Portland Cement Company since its organization twelve years ago, passed away recently at his home in Knoxville, Tennessee. Before joining the Volunteer firm he was connected with the old Atlas Portland Cement Company.

ROBERT B. HENDERSON, 63, president of the Pacific Portland Cement Company, is dead after a two-year illness. He died at his home in Burlingame, California, after collapsing while on a fishing cruise on his yacht in the Pacific Ocean. The widow and two sons survive.

WILLIAM S. BUCKLAND, 66, founder and head of the Philadelphia Slag Company, Swedeland, Pennsylvania, died May 30. Surviving are his widow, two daughters, two sisters and three grandchildren.

CHARLES J. PHIFER, 68, chief chemist of the Lehigh Portland Cement Company, died of a heart attack at the wheel of his automobile in Allentown recently. He had been with the company 42 years.

GLEN LEE, 41, mine foreman for the United States Gypsum Company at Southard, Oklahoma, was instantly killed recently when a loaded mine car became derailed and fell upon him from a 15-foot embankment.

WILLIAM H. QUINN, New York district manager of Chain Belt Company of Milwaukee, died suddenly on May 5 in New York City. Mr. Quinn had been with the company since 1923, and manager of the New York office since 1928.

GENERAL OTTO H. FALK, chairman of the board of the Allis-Chalmers Manufacturing Company, passed away May 21. He had been ill since last November of a heart ailment.

Trade Literature

Jaw Crushers. (28 pages) Allis-Chalmers Manufacturing Company, Milwaukee.

A Study of Modern Handling Methods. (12 pages) Caterpillar Tractor Company, Peoria.

Lima Type 1201 Shovel and Dragline. (16 pages) Lima Locomotive Works, Lima, Ohio.

The Strayer Portable Concrete Plant. (8 pages) Erie Steel Construction Company, Erie, Pennsylvania.

Micromax and Other Pyrometers. (folder) Leeds & Northrup Company, Philadelphia.

Lehigh Safety Shoes. (12 pages) Lehigh Safety Shoe Company, Allentown, Pennsylvania.

Colmonoy Hard Facing Alloys and Overlay Metals. (4 pages) Wall-Colmonoy Corporation, Detroit.

Cedar Rapids Kubit Breaker. (8 pages) Iowa Manufacturing Company, Cedar Rapids.

Flanged Lip Screens for Sizing and Dewatering. (12 pages) Hendrick Manufacturing Company, Carbondale, Pennsylvania.

Rock Drill Accessories. (12 pages) Ingersoll-Rand Company, Phillipsburg, New Jersey.

Jeffrey Mass-Flo Conveyor. (12 pages) Jeffrey Manufacturing Company, Columbus, Ohio.

Safety Clothing. (18 pages) Industrial Gloves Company, Danville, Illinois.

New Full Capacity Beam for Truck Scales. (4 pages) Fairbanks, Morse & Company, Chicago.

Raymond Mechanical Air Separator with Single or Double Whizzer. (4 pages) Raymond Pulverizer Division Co., Bustion Engineering Company, Chicago.

Diesels for Heavy-Duty Stationary Service. (16 pages) Chicago Pneumatic Tool Company, New York.

LABOR DECISIONS

Refusal to Deal

National Labor Relations Board v. Piqua Munising Wood Products Co., decided by the U. S. Circuit Court of Appeals, Sixth Circuit, February 16, 1940; reported at 109 Fed. (2d) 552.

This case arose out of a petition of the National Labor Relations Board for enforcement of its order directing the respondent company to desist from interfering with its employees in their right to self-organization, and directing it to bargain collectively with a union which the Board found to have been designated by a majority of the company's production employees. The company resisted enforcement of the order on the ground, among others, that it was not compelled to bargain collectively until the Board had first determined the appropriate unit of employees for that purpose and had designated the bargaining agency. The Court holds that that position is untenable:

"The Act assumed the existence of a quasi or constructive contract whereby a legal obligation was imposed on the employer, even against his intention, to deal with an appropriate unit of his employees, through their chosen representative, concerning the matters referred to in the statute, and the Board is without jurisdiction until the employer has violated his obligation and a complaint has been lodged with the Board pursuant to Section 10(c) of the Act. The employer acts at his peril in refusing to recognize a duly selected bargaining agency of an appropriate unit of his employees unless the facts show that in the exercise of reasonable judgment he lacked knowledge of the appropriateness of the unit or the selection of the majority representative."

The company also objected to the order on the ground that the facts as found by the Board were not the facts on which the complaint was based. The Court on this issue says that the complaint stated clearly that labor practices denounced by the Act were being pursued, and although it did not set out the particular facts constituting the unfair labor practice as finally found, "this was not necessary as all parties to the proceedings knew its basis." The Court concludes "that while the order may have been technically outside the issues raised by the pleadings, it was still germane to the subject matter before the Board. The real question before it and in the minds of all the parties was whether the respondent was engaged in unfair labor practices denounced by the National Labor Relations Act."

Interstate Commerce

Foster v. National Biscuit Co., decided by the U. S. District Court, Western District of Washington, Northern Division, February 20, 1940; reported at 31 Fed. Supp. 552.

This was a suit pursuant to the Fair Labor Standards Act to recover overtime and an equal amount as liquidated damages, together with interest, costs and attorneys' fees. The defendant company challenged the jurisdiction of the Federal district court because the amount in controversy was less than $3,000. That point was not decided, because the Court on its own motion ruled that the plaintiff did not state facts sufficient to constitute a cause of action as regards application of the Act.

The complaint alleged simply that "the defendant was a foreign corporation doing business in the state of Washington and operating a biscuit company in interstate commerce." The

For greater dragline yardage use a Page Bucket on the job!

Dragline buckets for all types of work • Capacities ⅜ to 15 cubic yards

There's a reason why more Page Dragline Buckets are used than any other make. By their yardage records on all types of work, Page Buckets have established a reputation of being able to outdig other buckets of equal size and weight. Get the greatest yardage possible from your dragline machine—dig with a Page Automatic Bucket! See your equipment dealer or write us for more information.

PAGE ENGINEERING COMPANY

Page Automatic Dragline Buckets · Page Walking Dragline Machines

CLEARING POST OFFICE, CHICAGO, ILLINOIS

The TY-ROCK FULL FLOATING CIRCLE THROW SCREEN

Coarse and Medium Sizes
Live Rubber Mountings
No Escaping Vibration

HIGH TONNAGES OF ROCK

The W. S. Tyler Company

CLEVELAND, OHIO, U. S. A.

in 1940 . . . .
. . . . in Any Year

Let Dixie Non-Clogging Hammermills Point the Way Toward:

- Longer Life
- Lower Costs
- Greater Profits
- High Capacity

Built in 40 sizes for a full range of reduction. Capacities to handle any type of material. Write for your copy of the DIXIE Catalog TODAY!

DIXIE
MACHINERY
MFG. CO.
4310 GOODFELLOW AVE.
ST. LOUIS

Court points out, however, that a corporation which is engaged in interstate commerce or which is producing goods for interstate commerce may likewise, as a part of its business be engaged in purely intrastate commerce as regards such portion of its business. Some employees of such employer might be concerned solely with the intrastate business of the employer and therefore not subject to the provisions of Section 7(a) of the Fair Labor Standards Act. (In this connection, the Court quotes from Interpretative Bulletin No. 1 issued by the General Counsel for the Wage and Hour Division of the U. S. Department of Labor.)

The plaintiff is granted permission to amend his complaint to bring himself within the application of the Act.

Enforcement

Amalgamated Utility Workers et al. v. Consolidated Edison Co. of New York, Inc., et al., decided by the U. S. Supreme Court, February 26, 1940; reported at 60 S. Ct. 561. The National Labor Relations Board ordered the Consolidated Edison Co. of New York and its affiliated companies to desist from certain labor practices found to be unfair and to take certain affirmative action. The Circuit Court of Appeals granted the Board's petition for enforcement of the order, and its decree, modified to some extent, was affirmed by the Supreme Court (*Consolidated Edison Co. v. National Labor Relations Board,* 305 U. S. 197, 59 S. Ct. 206, 83 L. Ed. 126). The Amalgamated Utility Workers brought the present proceeding in the Circuit Court of Appeals to have the Consolidated Edison Co. and its affiliated companies adjudged in contempt of court for failure to comply with certain requirements of the decree. The Court of Appeals denied the application upon the ground that the union had "no standing to press a charge of civil contempt, if contempt has been committed," holding that under the National Labor Relations Act "The Board is the proper party to apply to the court for an order of enforcement and to present to the court charges that the court's order has not been obeyed" (106 Fed. (2d) 991).

The Supreme Court, affirming the decision of the Appellate Court, holds that the National Labor Relations Act cannot properly be said to have "created" the right of self-organization or of collective bargaining, which rights already existed, and did not create any private right of action. Congress declared that certain labor practices should be unfair, and prescribed a particular method by which such practices should be ascertained and prevented. The Board was made the exclusive agency for that purpose.

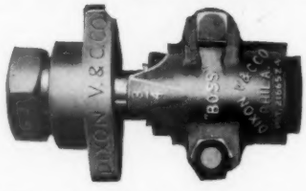
"Cease and Desist"

Art Metals Const. Co. v. National Labor Relations Board, decided by the U. S. Circuit Court of Appeals, Second Circuit, February 26, 1940; reported at 110 Fed. (2d) 148.

This was a review of an order of the National Labor Relations Board, contested by the employer on several grounds. The employer urged that it did not know that the union concerned represented a majority of its employees. Against this, the Court finds that the employer understood that it was dealing with those who at least claimed to represent a union of its employees, a majority being implied, and that the employer took the risk of refusal to deal, if the claim turned out to be well-founded.

The employer also maintained that the statute did not require that agreements be put in writing. This also is decided against it by the Court, which holds that "a permanent memorial of any negotiation which results in a bargain is not only appropriate, but practically necessary, to its preservation; it is hardly necessary to observe that without it the fruits of the privilege are exposed to the sport of fugitive and biased recollection."

"GJ-BOSS"
GROUND JOINT
AIR HAMMER COUPLING



No drilling job can be too tough for this strongest of all air hammer couplings! Ground joint — washerless. Furnished with strong malleable iron "BOSS" interlocking Clamp. No danger of blow-offs, leaks or pressure losses. Cadmium plated — rustproof. Compact type, Style XLB-61, ½" and ¾"; heavy type, Style XHB-72, ¾" and 1".

"BOSS" WASHER TYPE
AIR HAMMER COUPLING

Same as above, except for ground joint feature. Head of stem has flat flange to accommodate washer. Compact type, Style WLB-21, ½" and ¾"; heavy type, Style WHB-32, ¾" and 1".

Stocked by leading rubber manufacturers and jobbers

DIXON
VALVE & COUPLING CO.
MAIN OFFICES AND FACTORY: PHILADELPHIA
Branches: Chicago.. Birmingham .. Los Angeles .. Houston

The Board's order required the employer to post a notice that he would "cease and desist" from certain practices and take certain affirmative action. The Court sustains the employer's objection to the "cease and desist," agreeing that it compelled an admission of past violations. The order is modified to the extent of removing that language.

Jurisdiction

Gates v. Graham Ice Cream Co., decided by the U. S. District Court, District of Nebraska, Omaha Division, March 1, 1940; reported at 31 Fed. Supp. 854.

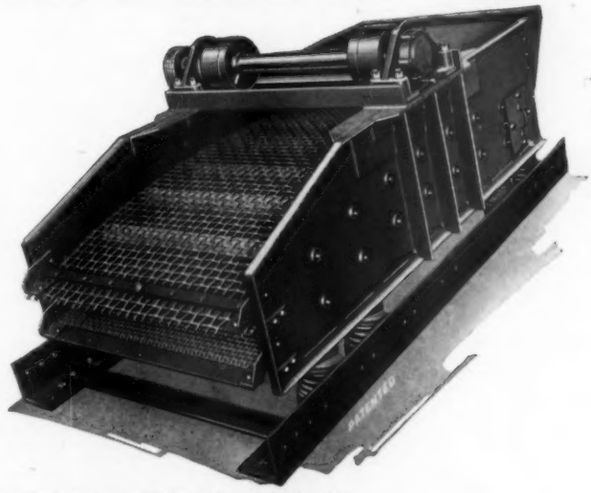
Plaintiff in this case is suing to enforce a penalty incurred under the Federal Fair Labor Standards Act of 1938, 29 U. S. C. A. § 201 *et seq*. The complaint alleges among other things that the defendant company is engaged in interstate commerce, but does not contain any allegation that the plaintiff's work was performed in the production of goods for interstate commerce; the defendant therefore challenged the jurisdiction of the Court. That contention is sustained, and the complaint was ordered dismissed unless the plaintiff amended it to bring himself within the coverage of the Act.

In such a case, according to the decision, there should be alleged in the complaint sufficient facts from which it may be made to appear that the work performed by plaintiff was in the production, manufacturing, handling, transporting or working on goods for interstate commerce, or in any process or occupation necessary in the production thereof. "We think," says the Court, "such an allegation is plainly required by the terms of the Act before it will appear that the Court has jurisdiction over the action as a case arising under the Fair Labor Standards Act, for unless this suit comes within the purview of the Fair Labor Standards Act, this Court is clearly without jurisdiction, since there is no diversity of citizenshp alleged, and the jurisdictional amount is not involved."

Signed Agreement

Inland Steel Company v. National Labor Relations Board, decided by the U.S. Circuit Court of Appeals, Seventh Circuit, January 9, 1940; reported at 109 Fed. (2d) 9. A final order entered by the National Labor Relations Board in this case required the petitioning company to withdraw recognition from an independent union, to bargain with a designated union as the exclusive representative of its employees, and, if an understanding were reached, to embody it in a signed agreement. The case came before the appellate court on the company's petition to set aside the order, and the board's petition for affirmance and enforcement. It was contended by the company that it had not received a full and fair hearing as required by law, and upon a review of the record the court finds such evidence of bias and prejudice on the part of the board's examiner that on that ground the order is set aside and the case is remanded to the board for further proceedings. Most of the contested issues, accordingly, are not discussed in the court's decision; however, the court does hold specifically that it was not an unfair labor practice for the company to refuse to sign a written agreement, since (in the view of this court) the act does not contemplate such requirement. "When the concession is made as it is, that the matter of a signed agreement is dependent upon a request by the employees or their representatives, and may be waived, we think it is clear that the matter becomes a subject of bargaining the same as any other request or demand. The statute is barren of any express language requiring a signed agreement and it must be held that no such agreement is required unless we are authorized to read into the term 'collective bargaining' the condition that all agreements, not some, must be reduced to writing."

DEISTER
PLAT-O VIBRATING SCREEN



1. Powerful high-speed vibrating mechanism.
2. Screen cloth automatically held under uniform tension.
3. Any one screening surface changed without disturbing remaining decks.
4. Cushioned vibration.

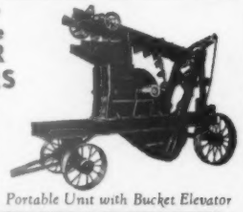
DEISTER MACHINE CO.
1933 E. WAYNE ST. FT. WAYNE, IND.
Canadian Licensee and Manufacturer:
Manitoba Bridge & Iron Works, Ltd., Winnipeg

PERFORATED METAL SCREENS
FOR SAND, GRAVEL STONE, ETC.
Manufactured exactly to your specifications.
Any size or style screen, in thickness of steel wanted with any size perforation desired.
We can promptly duplicate your present screens at lowest prices.
Prompt Shipment
CHICAGO PERFORATING CO.
2435 W. 24TH PLACE CHICAGO, ILL.
Telephone CANAL 1459

LOW COST CRUSHING FOR 55 YEARS
GRUENDLER TWO-IN-ONE
LIMESTONE PULVERIZERS
Paying Big Dividends
Built to withstand severe punishment
- Heavy Duty Manganese Hammers
- Roller Bearings for 100% Overload
- Heavy Cast Steel or Sheltaloy Construction for Long Life
- Adjustable Breaker Plate & Single Part Manganese Screen Bars
- Lowest Power and Maintenance
- Largest Capacity per H.P.

you can depend on
GRUENDLER EQUIPMENT
Write for Free 16-page Catalog and Specifications

Stationary or Portable
HAMMER CRUSHERS
Ideal for farm to market road work. Crushes stone to 1" minus down to agricultural lime dust.



Portable Unit with Bucket Elevator

GRUENDLER
CRUSHERS · PULVERIZERS · GRINDERS
GRUENDLER CRUSHER & PULVERIZER CO.
2915-21 N. Market St., St. Louis, Mo.

OCCUPATIONAL DISEASES AND THE LAW

Occupational Disease

State ex rel. Fisher Body St. Louis Co., et al. v. Shain et al., decided by the Supreme Court of Missouri, in banc, March 5, 1940; reported at 137 S. W. (2d) 546.

The purpose of this action was to have quashed the opinion of the Kansas City Court of Appeals in *Fitzgerald v. Fisher Bady St. Louis Co., et al.*, 130 S. W. (2d) 975. In that case, the Court of Appeals affirmed an award of compensation to the widow of a workman who dide from "tuberculosis induced by silicosis" after exposure to a fine dust from the spray-painting of automobiles. Analysis of the paint showed that it contained fine particles of silica, iron oxide, aluminum oxide, calcium carbonate and basic lead carbonate.

On certain disputed questions as to the admission of evidence, the Supreme Court sustains the appellate court. However, in its opinion, the latter court ruled that "in the absence of any provision [in the compensation law] to the effect that an occupational disease under that act is a disease 'incident' or 'peculiar' to the work it is reasonable to say the legislature intended that an occupational disease, within the meaning of the compensation law, is a disease caused by or directly resulting from working conditions." This ruling is held to be in conflict with the rulings of the Supreme Court, and the Supreme Court orders that that part of the opinion of the Court of Appeals be quashed.

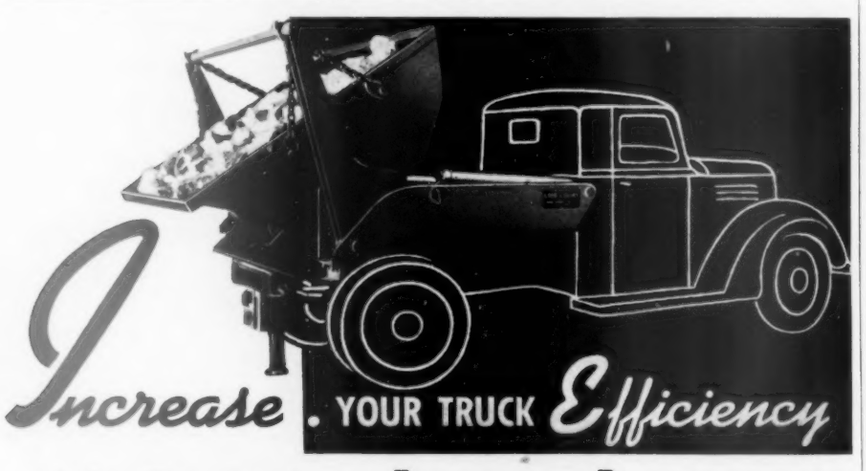
The ruling of the Supreme Court (stated as obiter dictum in *Wolf v. Mallinckrodt Chemical Works*, 336 Mo. 746, 81 S. W. (2d) 323, and adopted as a rule of the court in *Downey v. Kansas City Gas Co.*, 338 Mo. 803, 92 S. W. (2d) 580), is that "occupational disease," under the compensation law, includes only diseases peculiar and incident to the employment.

Silicosis

Barksdale v. Silica Products Co., Inc., decided by the Supreme Court of Arkansas, March 11, 1940; reported at 137 S. W. (2d) 901.

A workman, appellant in this case, contracted the occupational disease of silicosis while employed at a silica mine, and brought a suit at common law to recover damages. At the conclusion of his testimony, the trial court directed a verdict for the defendant employer, holding that the employee had assumed the risk of contracting the disease. The Supreme Court affirms that action, finding that the employee was fully aware of the conditions under which he performed his labor. "He knew the dust injured him and made complaint thereof, and was permitted to change his employment on that account, and he continued in the service without any promise to improve conditions. As a common-law proposition of the law of master and servant the trial court properly held that plaintiff had assumed the risk."

There is a statute in Arkansas (Section 9132 of Pope's Digest) which denies a corporation the defense of assumption of risk if its violation of any statute enacted for the safety of employees contributed to the injury or death of an employee. There is also a statute requiring that an employer keep his establishment free from injurious dust by means of ventilators or other adequate devices (Section 6470). The latter statute, however, had been in effect only six months before the employee in this case quit his employment, and the court holds that the silicosis was necessarily contracted before that section of law was in force.



with Brooks LOAD LUGGER

Ask about our Special Introductory Offer of a Two Weeks' Trial of the Brooks LOAD LUGGER.

Quarry operators, road builders, construction men and aggregate producers everywhere are reporting the increased efficiency of the Load Lugger mounted on a truck chassis. This letter is typical:
"The Load Lugger has replaced three dump trucks, and reduced the cost 25c per ton. In a test run at one quarry, production was increased 100 tons in ten hours." (Name on request.)
For further facts, write for Bulletin.

Brooks EQUIPMENT AND MFG. CO.
KNOXVILLE 107 Davenport Road TENNESSEE
Distributors in all Principal Cities

Asbestosis

Blassingame et al. v. Southern Asbestos Co. et al., decided by the Supreme Court of North Carolina, March 6, 1940; reported at 7 S. E. (2d) 478.

The compensation claim involved in this case was filed by the widow of a workman who had been employed in the asbestos industry in North Carolina almost continuously from 1925 until shortly before his death in 1937. For some time before his death and during his last illness he had all the characteristic symptoms of a true asbestosis, but no doctor had so diagnosed the illness. He died from pneumonia superimposed upon the the asbestosis, and the widow first knew that her husband had had asbestosis when the autopsy report was filed.

The North Carolina Workmen's Compensation Act, made applicable to asbestosis and silicosis cases by Chapter 123 of the Laws of 1935, requires notice to the employer within 90 days in case of death from an occupational disease, and since such notice was not given in this instance, the claim was contested on that ground. The notice was given, however, within 90 days from the filing of the autopsy report. It was thus impossible for the widow to have given notice of death resulting from asbestosis within 90 days, and the Court sustains the Industrial Commission in holding that there was compliance with the statutory conditions. To construe the requirement of notice as urged by the employer would be to deny compensation in such a case, and "the context of the Compensation Act does not favor such a strained or technical construction." It was sufficient that notice was given within 90 days after discovery of the compensable cause of death.

The Houston office of the Chicago Bridge & Iron Company has been moved from 2919 Main Street to 918 Richmond Avenue on June 1. The personnel of this office, which has previously been restricted to sales work, will be augmented by the transfer of S. C. Hamilton from Birmingham to Houston and by the opening of a new erection division office to handle the supervision of field work in the Southwest. W. T. Hudson will be in charge of the erection office in Houston and will be assisted by Dan O'Laurie.

The Dallas office of the Chicago Bridge & Iron Company will also be moved on June 1 from the Liberty Bank Building to the Praetorian Building. The personnel of that office will be increased by the transfer of R. A. Williams from Chicago to Dallas.

Meckum Engineering, Inc., has been formed at Chicago, with offices at 53 West Jackson Boulevard, to supply engineering service and equipment for dredging service and sand-and-gravel plants.

J. W. Meckenstock, president, and George C. Krumlin, vice-president and treasurer, are well known in the industry.

TRAFFIC NEWS DIGEST

Stone, Sand, and Gravel—At a hearing before Examiner W. A. Disque in Chicago on May 4, witnesses for the Chicago & Illinois Western in Docket 19610, the Chicago switching case (reopened), asked the Commission's permission to publish a flat rate of $8.00 a car on dolomite to be hauled from three quarries in the vicinity of McCook, Illinois, within the switching district, to the proposed location of the Standard Lime & Stone Company plant, the distance being less than a mile. The presnte rate, under the Commission's order in the switching case, was 44 cents a ton, which figured out at $22.00 for a car of 100 tons. According to the testimony, if the $8.00 rate were permitted it would be assessed on each car of 70 tons.

The construction of railroad facilities at the proposed plant, according to J. A. Kirk, Jr., traffic manager of the Standard company, was dependent on the publishing of the $8.00 rate. He

Three Sly Dust Filters Exhausting Packing Machines and Conveyors in a Large Cement Plant.

"We Have Found the SLY DUST COLLECTOR Very Satisfactory"

● "We are absolutely sold on the idea of eliminating all dust around our plants by the use of dust collectors and we have found the Sly Dust Collector very satisfactory," writes a prominent cement manufacturer.

How satisfactory this company has found Sly Collectors may be judged by repeat orders: Two years ago they purchased an installation of three filters for one of their pack houses. Later, two large filters in the finish mill. Then, two filters in another pack house. And since then—*eight additional filters in pack houses and finish mills of other plants of this same company.*

Sly offers definite advantages in economies in space and power. *Sly installations are not expensive.* In the cement mills of the United States and Canada there are more Sly Dust Filters by far than any other make (estimated at four times as many as the next most popular make).

Tell us about your dust problem in connection with crushing, grinding, screening, conveying rock products. Ask for new Bulletin No. 98.

THE W. W. SLY MFG. CO.

Branch Offices in Principal Cities

4745 Train Avenue Cleveland, Ohio

IT COSTS NO MORE TO USE THE BEST

REPLACE WITH
"Indian Brand"
MANGANESE STEEL
LONG LIFE
ABRASION
RESISTING PARTS
FOR
QUARRY, ROAD,
DREDGING,
AND
MINING MACHINERY

The Frog, Switch & Mfg. Co. CARLISLE, PA.
ESTABLISHED 1881

FARREL BACON
CRUSHERS
Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants. Engineering Service

EARLE C. BACON, Inc.
17 John St. New York, N. Y.

said if this was not possible his company intended to open a quarry on its own property adjacent to the plant. It was also testified that transportation by truck from the existing quarries to the site of the proposed plant would cost no more than 10 cents a ton. K. H. Lyrla, of the Illinois Central, one of the owning corporations of the Chicago & Illinois Western, entered as evidence figures intended to show that there would be a profit for the railroad in the movement under the rate proposed. The Illinois Central's attorney, Harold E. Spencer, who conducted the case for the railroad, said a prompt decision was imperative if the Standard company was to complete its construction this summer. He waived the filing of briefs and the entering of a proposed report in view of the fact that there was no opposition to the proposal at the hearing.

Fourth-Section Applications.—Docket 18460—Filed by B. T. Jones requesting fourth-section relief to establish rates on sand, gravel, and crushed stone in carloads from points in Illinois to points in Indiana carrier competition and to maintain rate relationships between producing points being grounds for relief.

Docket 18462—Filed by B. T. Jones requesting fourth-section relief to establish rates on gravel and crushed stone carloads from Riverton, Kern, and Greencastle, Indiana to Mattoon, Illinois to meet wayside pit competition.

Docket 18468—Filed by J. G. Kerr requesting fourth-section relief to establish rates on lime carloads from and to points in the south to meet carrier competition and to maintain grouping.

Docket 18476—Filed by R. A. Sperry requesting fourth-section relief to establish rates on gravel road surfacing carloads from Louisiana, Missouri to Jacksonville, Illinois to meet wayside pit competition.

Fourth-Section Orders. — Docket 13358—(3rd supplemental)—Crushed stone from Joliet, Illinois to Niles, Michigan—Petition filed by B. T. Jones—Fourth-section Order 13358 entered March 11, 1939 in Fourth-section application 17698 as modified and amended by supplemental orders entered therein from time to time further modified and amended to provide that the relief contained therein shall continue until December 20, 1940.

Docket 13409—(3rd supplemental) —Crushed stone to Three Oaks, Galien, and Buchanan, Michigan—Petition filed by B. T. Jones—Fourth-section order 13409 entered April 24, 1939 in fourth-section application 17738 as modified and amended by supplemental orders entered therein from time to time further modified and amended to provide that the relief contained therein shall continue until December 20, 1940.

Docket 13840—Gravel to Whitehall and Berdan, Illinois — Application 18421—Filed by R. A. Sperry for and on behalf of Alton—Until September 1, 1940 the applicant herein authorized to establish and maintain for the transportation of gravel road-surfacing passing through a 1-inch screen (not suitable for concrete construction) carload minimum weight 90 per cent. of marked capacity of car except when car is loaded to full visible capacity actual weight will apply a rate not lower than 40 cents per net ton from Louisiana, Missouri to Whitehall and Berdan, Illinois and to maintain higher rates to intermediate points provided that the rates to such higher-rated intermediate points shall not be increased except as authorized by this Commission and shall not exceed the lowest combination of rates subject to the interstate commerce act.

INCORPORATIONS

WARREN CRUSHED STONE COMPANY, Frankfort, Kentucky. $20,000. R. E. Gaddie, J. C. McLelland, Mattie Lou McLelland.

READY MIXED CONCRETE CORPORATION, Gainesville, Florida. $25,000. B. W. Kirk, T. S. Baker, W. A. Shands.

U. S. ASBESTOS CEMENT PIPE COMPANY, Camden, New Jersey. $125,000. Donnell K. Wolverton.

MCVAUGH READY MIXED CONCRETE COMPANY, Anderson, Indiana. William F. McVaugh, Claude P. Myers and M. A. Neville.

TRADE NOTES

John Reiner & Company, used- and surplus-equipment dealer in New York City has moved to its new building at 12-12 37th Avenue.

Garfield & Company has been appointed distributor for Lima Locomotive Works, Inc., Shovel and Crane Division, handling a complete line of Lima shovels, draglines and cranes. Headquarters are in the Hearst Building, San Francisco.

The Western Precipitation Corporation, Los Angeles, announces the opening of a sales and engineering office in the Marquette Bui'ding, Chicago. A. W. Robinson, who has been associated with the corporation for many years, is in charge of operations in the central states.

The controlling interest in the Insley Manufacturing Company of Indianapolis has been sold by the founder, W. H. Insley, to the Joseph Reid Gas Engine Corporation of Oil City, Pennsylvania. The new owners are continuing to operate the business without change in name, products or policy. The Insley company has been manufacturing excavating equipment since 1905.

Export rights to Downingtown paper-mill and cement-asbestos machinery have been granted the United States Machinery Company of New York by the Downingtown Manufacturing Company.

NEW MACHINERY AND SUPPLIES

• Excavator

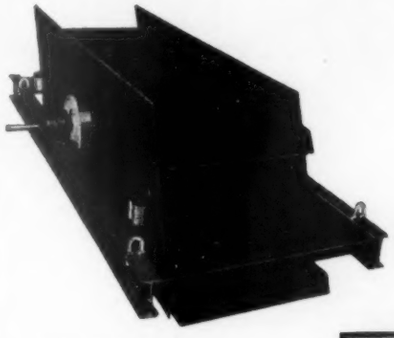
The newest Osgood air-control power-shovel, Model 800, was developed to meet the need for a fast, economical, easily operated shovel. All motions of the machine are controlled by air-operated clutches. Air is supplied by a two-cylinder compressor driven from the end of the engine shaft. The controlling valves are of the metering type which permits the operator to apply the clutches at any speed he desires and gives smooth easy operation. By use of the metering valves the operator has the feel of the load at all times and can spot the dipper for truck loading without sudden starts or stops.

The Model 800 machine is provided with an air-operated swinging brake which can also be used as a traveling brake when the machine is moving into a new position. The steering is accomplished by means of air cylinders which disengage the steering clutches and engage brake bands. The dipper trip is operated by air and is controlled by a small lever at the operator's elbow. All the air control valves are placed directly in front of the operator for convenient operation, and all other operating levers are brought to the operator's position including the engine throttle.

The truck parts are all of cast steel, the tread links being of chrome-steel heat treated. The boom is of Man-ten steel, box-girder type, all-welded construction. The shipper shaft is located above the center of the boom to give greater working ranges. The dipper sticks are of the outside type, made of Man-ten steel, all-welded construction, with manganese racks doweled and bolted to the sticks. The crowding is of the independent chain driven type

Lubrication authorities generally agree that oil with a flash-point below 200 degrees is unfit for use. The new Flash Master Tester, pictured above, makes it a simple matter to detect dilution before it can cause damage. The device is portable and operates from any light socket. It is manufactured by the Galloway Company, Waterloo, Iowa.

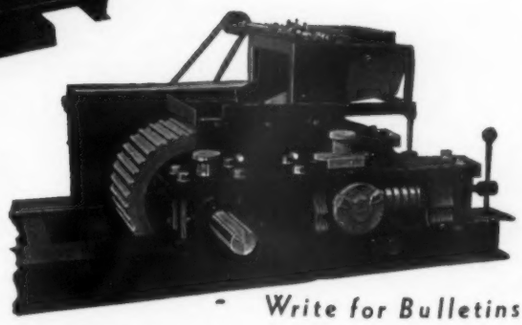
NEW HOLLAND CIRCLE THROW SCREENS
Strike Out High Grading Costs
EVERY TIME!



New "CIRCLE THROW" action has plenty "on the ball"—lowers batting average of grading costs to bush league figures. Increases **quality** production of sand, gravel, aggregates. Full line of sizes.

This Roll Crusher likes *tough* opposition

A New Holland Roll Crusher reduces any rock material to required fineness at high rates of capacity. Output is doubled by patented pulsating feeder. Sizes for any production up to 100 tons per hour.



Write for Bulletins

NEW HOLLAND MACHINE CO., New Holland, Pa.

"THIS BUCKET'S GOT WHAT IT TAKES"

◄ Tearing out this old Baldwin Locomotive Works foundation at Philadelphia was about as tough a test as a bucket ever gets. Wm. Geppert, Inc., owners of the bucket, report that the ½-Yard Williams Multiple Rope did an extraordinary job in digging into and removing the massive stone and heavy chunks of concrete.

Powerful in biting and gripping, fast in action, and ruggedly built with welded construction at vital points, Williams Buckets are without a superior for hard service.

Bulletins describing all types of Williams Buckets sent FREE *on request.*

THE WELLMAN ENGINEERING CO. • 7014 Central Avenue • Cleveland, Ohio

WILLIAMS *Buckets*
built by WELLMAN

Simplicity Gyrating Screens were built as shown above in 1922. Since then, many thousands have been built for every screening operation. This background of experience combined with progressive engineering has kept the Simplicity Screens firmly at the top. We offer proven screening results for your consideration.

Simplicity

ENGINEERING COMPANY

DURAND, MICHIGAN

NEW √ in Mobility
√ in Road Speed
√ in Digging Ability
√ in Low Upkeep

The new Model 75-W Haiss Loader on Pneumatic Tires will handle a lot of material from scattered stockpiles on NEW basis of bedrock-minimum costs.

Ask for Bulletin No. 340

WRITE, WIRE OR TELEPHONE

HAISS

George Haiss Mfg. Co., Inc., 142nd St. & Rider Ave., New York

Who, for nearly half a century, have created and sold none but equipment of demonstrable superiority in design and manufacture.

Portable Conveyors—Revolving Screens

Air-controlled power shovel.

and the boom angle can be changed without adjustment of the crowd chain.

All high-speed shafts are mounted on anti-friction bearings and the low-speed shafts which are heavily loaded, are carried in high-grade bronze bushings. Power is taken from the engine by a Morse silent chain and is direct geared from the countershaft to the drum shaft, giving a continuous flow of power direct from the engine to the hoist rope. The swing clutches are single-disk heavy-duty clutches made by The Twin Disc Clutch Company and are operated by air cylinders.

• Truck-Mixer

The new Jaeger line of "High Dump" truck-mixers and agitators, designed with a high discharge point to meet unusual placing conditions, will deliver concrete of low or high slump over a wider radius, will spout it into higher forms, over material piles, into large floor hoppers, than heretofore.

Many advanced features distinguish this High Dump line according to announcement of the manufacturer, The Jaeger Machine Company, Columbus, Ohio.

Extra big drums, top loading in one drop, provide extra capacity, all that the truck is designed to carry. At the same time there is ample void space for proper mixing of material when drum is fully loaded. Top loading permits one-shot charging, the quickest and the natural method of loading whereby materials are dropped in the center of the drum, distributed evenly, ready to mix with the first revolution. Moreover, dead weight of loading hopper is eliminated.

Dual-mix action insures high-strength concrete because of positive, thorough mixing. Patented throw-back blades pick up material bodily, hurling it back into center of mass, giving complete end-to-end mix. Fastest discharge, particularly of low-slump concrete, results from the fact that the discharge end is not obstructed by charging chute, allowing bigger discharge blades of steeper pitch.

The vacuum-operated discharge door requires but a flip of the finger to open or close, controls opening as desired. The sypho-meter tank with "winter safety" water booster measures water accurately within ½ of 1 per cent., unaffected by splashing or the surging of water in tank.

Their compactness allows mounting the 2 cubic yard size on short wheelbase trucks such as the 134-inch wheelbase Ford. In addition to these "High Dump" truck mixers, Jaeger also manufactures a complete line of standard heavy duty truck mixers whose efficiency and high production have gained them world wide recognition. "High Dumps" are supplied in three sizes—2, 3, and 4 cubic yards with approximately 50 per cent. greater capacity when used as Agitators. Heavy-duty truck mixers are made in sizes up to 6 cubic yards.

• Mixing Plant

The Strayer portable concrete-mixing plant, made by the Erie Steel Construction Company, Erie, Pennsylvania is fully equipped to mix concrete to exact specifications. The unit includes a bin, weighing Aggre-Meter, screw-feed cement hopper, mixer, power unit, and material elevator with truck hopper, all built into a steel truck frame equipped with dual pneumatic tires, designed to conform to regulation highway clearances.

The plant in transit is hauled behind a truck with the elevator pivoted to a horizontal position and the bin sides turned down for low overall height, the plant dimensions being 8 feet wide, 12½ feet high and 28 feet long. Its weight is approximately 24,000 pounds, exclusive of ramps and truck hopper.

The Strayer plant is adaptable to large and small jobs, such as grade separations, bridges, culverts and many other types of work, and can be used with various types of concrete-placing equipment such as towers, buggies, buckets, belt conveyors, concrete pumps and agitator trucks. Depending on the required mixing time and other variable factors, the plant has a capacity for producing up to a maximum of 30 cubic yards of concrete an hour. It has all the necessary equipment to

New "high dump" truck mixer discharging to hoppers.

meet the most exacting specifications, such as automatic water control, weighing Aggre-Meter, and an approved mixer with standard batch meter.

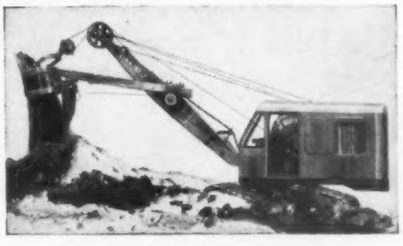
Bulletin SCP-2-39, describing this portable concrete mixing plant and illustrating its use on a variety of jobs, may be secured direct from the manufacturer.

● *Excavator*

A new, powerful 1- to 1¼ cubic yard convertible shovel-dragline-crane, Model LS-100, is announced by Link-Belt Speeder Corporation, Chicago.

The machine is controlled by easy-throw levers and equipped with a new type of clutch, said to produce results never before attained by friction clutches—a booster system that actually does give the "feel" of the load at all times.

Further features are: fully-inclosed travel brakes controlled from cab; fully inclosed traction gears running in oil; a 2 inch machine-finished roller-path turn table with patented, self-alineing rollers; anti-friction bearings throughout; free floating center-pin bearings; and welded steel design for strength and resistance to shock loads and to provide positive alinement of machinery parts.



New model convertible shovel.

The engine is a heavy-duty industrial type gasoline or Diesel, or a size usually only found in larger units. Track shoes are 24 inches standard (30 inches optional); crawlers are smooth, self-cleaning and perfect guiding.

The machine may be quickly converted from one excavating or handling attachment to another, without mechanical alteration.

● *Bituminizing Plant*

A complete, small bituminous plant, capable of feeding itself, drying the aggregate, heating the bitumen, accurately proportioning the aggregate and bitumen, and delivering a homogenous mass either to trucks or wheelbarrows, has just been announced by Barber-Greene Company, Aurora, Illinois.

Consisting of two basic units, a mixer and a drier, each of which can be towed at truck speed, this new plant offers unequaled portability. No auxiliary equipment is necessary. With the material available, the owner only needs to have trucks or wheelbarrows for hauling the mix away.

The new Barber-Greene maintenance plant can be set up in a number of combinations. The mixer can operate either with or without the drier. The pugmill can discharge directly into wheelbarrows or be set up with an accessory conveyor for elevating the material into trucks. The drier can be fed either by small drag-line which operates from the mixer power unit or any other means.

The plant is not only completely self-operating but is complete in its ability to deliver any type of mix desired, including the higher type mixes. The pugmill is steam-jacketed.

Working on the same principle as the larger Barber-Greene continuous mixers, this plant has a surprisingly high capacity from 200 to 300 tons of finished mix per day.

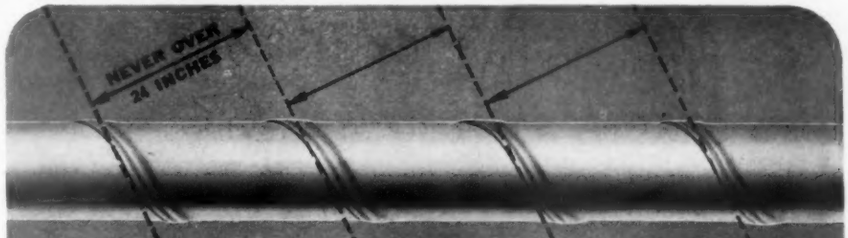
● **Pictured above is a real veteran, with a record of 15 years in the service of Consolidated Rock Products Co., Los Angeles. "It's given us good service for 15 years," says R. C. Griffin, production manager.**

AND . . . Today You Get The Same Rugged Construction in the Modern, Versatile PLYMOUTH FLEXOMOTIVE!

All Plymouth locomotives, including the amazing new FLEXOMOTIVE, are built for long years of heavy duty service. Get the facts. Consult Plymouth about locomotives.

PLYMOUTH LOCOMOTIVE WORKS
DIVISION OF THE FATE-ROOT-HEATH CO., PLYMOUTH, OHIO

Plymouth GASOLINE • DIESEL • ELECTRIC • BUTANE • PROPANE Industrial Locomotives



The Strongest Part is the Spiral Seam

– and there is PLENTY OF SPIRAL

THAT spiral lap welded seam reinforces each length of Taylor Spiral Pipe from end to end—gives it strength beyond that of any pipe of its weight. In Taylor Pipe the pitch of the spiral is carefully selected for each group of sizes to give the proper structural strength for the given pipe diameter, as shown above.

This stronger but lighter pipe can cut your costs. There is a type of joint—a type of protective coating—a size and gauge —for every service where a light walled pipe is used.

TAYLOR FORGE & PIPE WORKS
General Offices and Works: Chicago, P. O. Box 485
New York Office: 50 Church Street

TAYLOR *Spiral* PIPE

Triple-Powered Vibration with TRI-VIBE equipped

The Leahy HEAVY DUTY **Vibrating SCREEN**

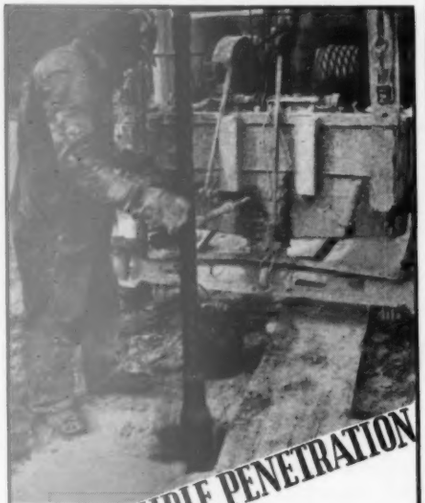
You need this **extra** dynamic vibration on every square inch of the free-swinging screen jacket to get maximum capacity and uniformity in **fine mesh screening.** Get the facts about this great engineering feature.

Bulletin No. 14 will be sent on request

THE DEISTER CONCENTRATOR COMPANY

The Original Deister Co., Est. 1906

911 Glasgow Ave., Ft. Wayne, Ind.



FOR FLEXIBLE PENETRATION

When strokes per minute mean dollars earned per hour—Safeguard expensive equipment from costly shut-downs with FITLER "Philadelphia" Manila Drilling Cable.

Look for the Blue and Yellow Colored Yarn Trademark

DRILLING CABLE

THE EDWIN H. FITLER CO.

PHILADELPHIA, PA.

Established 1804

Single-bucket scraper incorporates several advanced features.

• Scraper

R. G. LeTourneau Inc., of Peoria, Illinois, has introduced its latest single bucket Carryall scraper, Model LS, rated at 8.2 cubic yards struck capacity and 11 cubic yards heaped.

Several new features are incorporated in this new model. Loading is made easier by a longer and steeper blade base, which causes material to boil in, to flow back into the bowl and forward into the apron. Additional yards are made possible by higher sides and a built up apron which retains full loads and prevents spilling. A newly designed "A" frame gives more room for bigger loads, speeds up loading, facilitates dumping of sticky materials, and also adds structural strength.

With the apron cable dead ended on the apron, all hoist and unloading cables are now placed up and out of the dirt, eliminating abrasive cable wear. The power demands of larger loads are reduced by centering fixed sheaves at the tailgate so that a direct pull is attained on the positive ejection tailgate.

At the option of the purchaser, the Model LS Carryall can be fitted with either four or six large tires that give ample flotation and necessary compaction. Plenty of tire clearance, under any reasonable conditions, is assured at all times by a goose neck type yoke.

A REVIEW OF RECENT BOOKS

PUBLIC AIDS TO TRANSPORTATION, *by Charles S. Morgan. In four volumes, paper covers. Published by Superintendent of Documents, Government Printing Office, Washington, D. C. Price $2.40 per set.*

This four-volume report presents the results of an investigation instituted in 1933 as a phase of the research program of Joseph B. Eastman, chairman of the Interstate Commerce Commission and at that time Federal Coördinator of Transportation. It was prepared by Charles S. Morgan, former director of the Coöordinator's section of research, and others, with a foreword by Chairman Joseph B. Eastman.

Delay in completion and publication of the report has not lessened the interest it will command. On the contrary, the increased attention now being given the highly controversial "subsidy" question makes the appearance of the report most timely.

The four volumes attempt to answer questions such as the following: Have motor vehicles paid their way; what public aid has been given to water transportation and what have been the results, what have been the results of the operations of the Inland Waterways Corporation; what aid has been given the railroads and the airlines; what have been the benefits conferred by public aids; how heavily are the railroads taxed in comparison with other industries; are railroads entitled to credit for nonproductive expenditures; what lines of policy are available in dealing with the problems created by public aids (the question of tolls, etc.), and how best may projects which call for public aid in the future be appraised in the public interest?

The report should be of interest not only to carriers and shippers and employees of transportation agencies, but also to legislators, regulatory bodies, officials responsible for the construction and maintenance of highways and other public transportation facilities, tax officials, financial institutions, students of transportation, and many others.

THE CHEMICAL FORMULARY, *edited by H. Bennett. Published by Chemical Publishing Company, New York City. Price $6.00.*

This is the fourth edition of this popular volume and it is quite apparent that considerable research has been undertaken to bring the book up-to-date. From the entire literature of chemistry, expert chemists in each field have selected the best and most practical formulas. Complete in every detail this book furnishes not only the names and qualities of each ingredient, but it explains fully the steps to follow in the production of the finished material. It gives thousands of details about methods of working and manner of use that are of the utmost value in the preparation of every commercial or technical product.

• Arc Welder

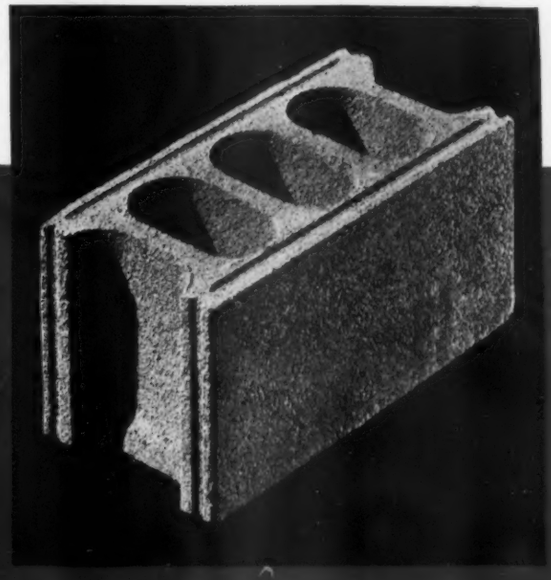
General Electric has announced a new resistor-type, direct-current arc welder designed particularly for mine service. Portability and sturdy construction are among the chief features of this new welder.

It is only 17 inches high, 20 inches wide, and 30 inches long, and weighs but 78 pounds. To withstand rough handling successfully, the resistor units are wound in continuous coils without joint and are supported by spool-type porcelain insulators. Inclosing screens protect the interior from falling material.

Welding current can be adjusted over the welding range, in 10 steps of approximately 17 amperes each, by means of five heavy knife switches. It is nominally rated at 250 volts, and will operate on a power line of 225 to 275 volts.

The CONCRETE MANUFACTURER

A Special Section of ...



Only STEARNS JOLTCRETE blocks have been proven!

All your customers want vibrated blocks, because of the Stearns Joltcrete blocks they have seen. *There is a vast difference in different forms of vibration.* Only the Stearns Joltcrete Machine is licensed under the patented method by which the mold box is vibrated while the material is under pressure —*limited amplitude* vibration.

And only in the case of Stearns Joltcrete units, have vibrated blocks proven—by authoritative tests*—their higher early strength, lower absorption, less volume change and extremely light weight when made of light aggregates.

The whole significant history of vibrated concrete units in the last three years is a record of Stearns Joltcrete achievement.

Stearns introduced a new method and a new machine in 1938. At first received with doubts, Stearns Joltcrete in two and a half years has won almost universal acceptance. Well over a hundred Stearns Joltcretes have been bought. In 1939 more than fifty million Stearns Joltcrete blocks were made and sold.

If you want to offer your market a masonry unit of proven worth, install Stearns Joltcrete.

STEARNS
MANUFACTURING CO. - ADRIAN, MICH.
GENE OLSEN, PRESIDENT

* See Wisconsin Test Results as reported in the Journal of the American Concrete Institute, Nov., 1939.

The CONCRETE MANUFACTURER

July, 1940

A SPECIAL SECTION OF PIT AND QUARRY DEVOTED TO PRODUCTION MARKETING AND USES OF CONCRETE PRODUCTS AND READY-MIXED CONCRETE

Published by Pit and Quarry Publications
538 South Clark St. Chicago

H. W. BAUMGARTNER
President

STANLEY A. PHILLIPS
Vice-President and Directing Editor

Field Editor:
W. E. TRAUFFER

Assistant Editor:
HARRY F. UTLEY

Circulation Manager:
W. T. KLUSSMAN

Advertising Manager:
JAMES E. MONTGOMERY
Telephone HARrison 9357
Chicago, Ill.

Eastern Advertising Manager:
W. A. WILSON
Room 430, 122 East 42nd St.
Telephone CALedonia 5-4438
New York, N. Y.

Central Advertising Manager:
W. H. SANDERSON
Auditorium Bldg.
Telephone CHerry 4432
Cleveland, O.

Advertising Representatives:
D. R. EGBERT
Chicago, Ill.

W. H. GRUBBS
Western Pacific Bldg.
Telephone Prospect 3746
Los Angeles, Cal.

DUNCAN A. SCOTT & CO.
Mills Bldg.
Telephone Sutter 1393
San Francisco, Cal.

Field Representatives:
A. C. PETERSEN
J. K. GARESCHE
H. C. FINLEY

High spot of the convention at Cincinnati in May was the banquet of the National Burial Vault Association, which discussed its problems over a three-day period. The banquet was attended by the vault makers, their ladies, and guests. Attendance was excellent as the illustration attests.

Opens Ready-Mix Plant

Powell Brothers, Inc., long engaged in the building-supply business at Alameda, California, have opened a ready-mixed-concrete plant.

■

New Carolina Company

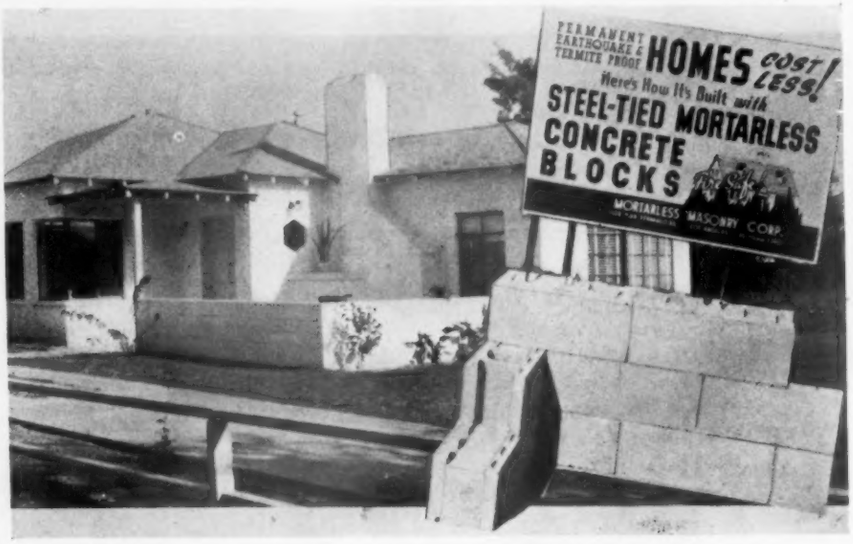
The Transit-Mix Concrete Company of Charlotte, North Carolina, recently formed by F. M. Simmons, is now in operation. A Butler batching plant and Smith-Mobile truck-mixers are used.

The owner formerly headed the Simmons Construction Company.

■

Buys Truck-Mixers

The Carl Lotz Sand & Gravel Company, Wausau, Wisconsin, has installed equipment for the production of ready-mixed concrete and has purchased two truck mixers.


PERMANENT EARTHQUAKE & TERMITE PROOF
HOMES COST LESS!
Here's How It's Built with
STEEL-TIED MORTARLESS CONCRETE BLOCKS
MORTARLESS MASONRY CORP.

Picture postcard used by the Mortarless Masonry Corporation of Los Angeles to promote the use of concrete units in residential construction. A message on the reverse side points out that this type of construction costs no more than ordinary wood frame and that it is firesafe, termite proof, earthquake resisting and will last through the ages.

Truck-Mixer Fleet Grows from 2 to 7 Over Two-Year Period

A GOOD illustration of the opportunity for ready-mixed concrete in cities not formerly supplied with it is afforded by the case of the General Materials Company of St. Petersburg, Florida. This company was formed in January, 1938, as a producing subsidiary of the Smith Service Company, road contractor. Beginning with wooden bins and two truck-mixers, the company was forced within six months to build a larger plant, and a year ago installed a plant mixer further to increase capacity. The truck fleet now consists of seven 2-cubic yard Concrete Transport mixers mounted on Chevrolet trucks and three 1½-cubic yard Concrete Transport mixers mounted on Ford trucks. Business has kept on increasing at such a rate that operations are now being moved to another location where more ground space is available.

The present yard at 23rd Street and 3rd Avenue South has space only for the plant and a small amount of aggregates in stock-piles. There is track space for only three cars of aggregates and this is insufficient when heavy pours are being made. The new property at 8th Avenue and 24th Street South consists of a square block with over 1,500 feet of trackage. An aggregate-bituminizing plant has already been erected there and, in addition to the concrete plant, there will be ample space for shops, an office, and adequate stock-piles.

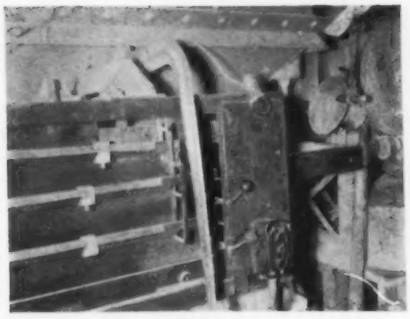
The company produces its own sand at Largo, 18 miles northwest of St. Petersburg, where a small new plant has just been completed. A Sauerman ¾-cubic yard scraper operated by a crane feeds sand from the pit into a hopper, from which it goes through a flume with water into a Link-Belt drag-washer. Sand is carried on a belt-conveyor to two stock-piles over a truck-loading tunnel. The rock used in concrete is shipped in cars from Brooksville. New York trap rock is specified in certain types of asphalt mixtures and this is shipped in by boat from plants on the Hudson River above New York City.

At the concrete plant aggregates are discharged from cars or trucks into a hopper, from which an elevator feeds them to the three compartments of a Blaw-Knox steel bin. A Blaw-Knox 1-cubic yard batcher is used to weigh aggregates into the 1½-cubic yard Concrete Transport plant mixer. Cement is carried in sacks to the mixing floor on a belt-conveyor and water from wells on the property is measured in a volume tank. At present complete mixing is done in the plant and the trucks are used as agitators, but, if required, the plant mixer can be used for shrinking.

A loaded truck-mixer leaving the General Materials plant at St. Petersburg.

The mixer installation is unusual in that it is dustless. Steel plate, cut to fit and welded, seals the mixer opening when it is in the loading and mixing position, and an exhauster fan removes any small amount of dust which might seep through the cracks. For dumping the mixer is tilted electrically by means of a push-button control and can be stopped at any point for inspection of the mixture.

An interesting feature is the portable tower used by the company for delivering concrete at elevated points. This tower, mounted on an old truck, has a ⅓-cubic yard skip-bucket operated from a hoist on the truck, and is said to deliver concrete at a height of 40 feet. It is used chiefly to pour roof slabs on 1-story buildings, but has been used to furnish all the concrete for 3-story buildings. This tower was developed three years by Transit Mix Concrete, Inc., of Orlando, Florida, for its own use and a number of the same kind have been built for other producers in the state.



Aggregate-batcher scale, mixer controls and water tank.

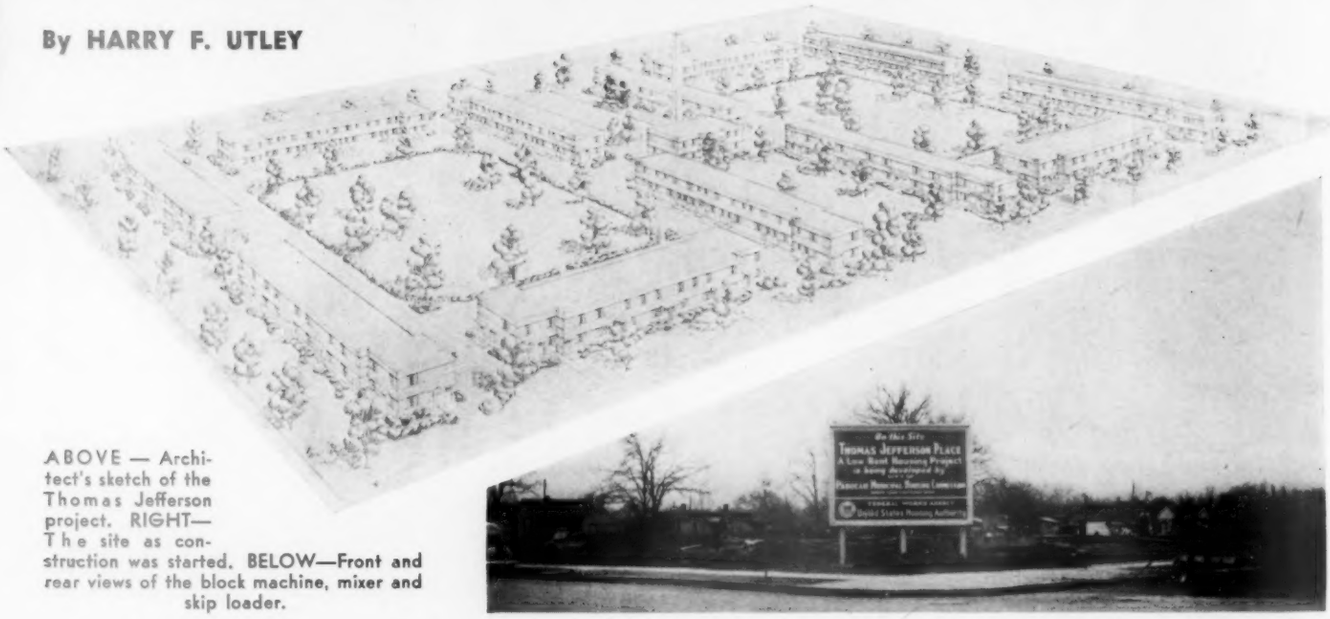
The plant mixer in partly-tilted position for inspection of concrete.

Drag-scraper at the sand plant.

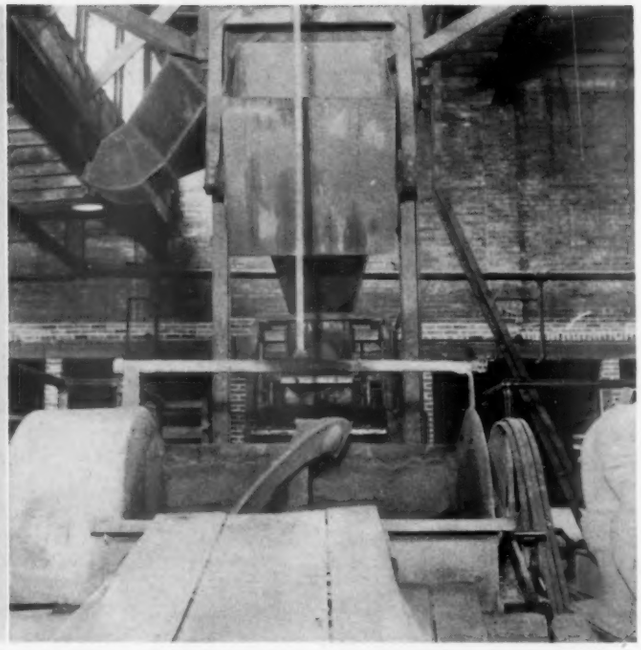
Most of the concrete sold is used in the construction of houses and small business buildings. At one time in 1939, however, concrete was being supplied on a 7,000-cubic yard contract for a Negro housing project, and on large contracts for a hospital and a city hall. This demand, with regular business, required the production of 30,000 cubic yards of concrete in a 4-month period with a peak of 282 cubic yards in one day.

New Block Plant at Paducah Supplies 287,000 Units to Housing Projects

By HARRY F. UTLEY



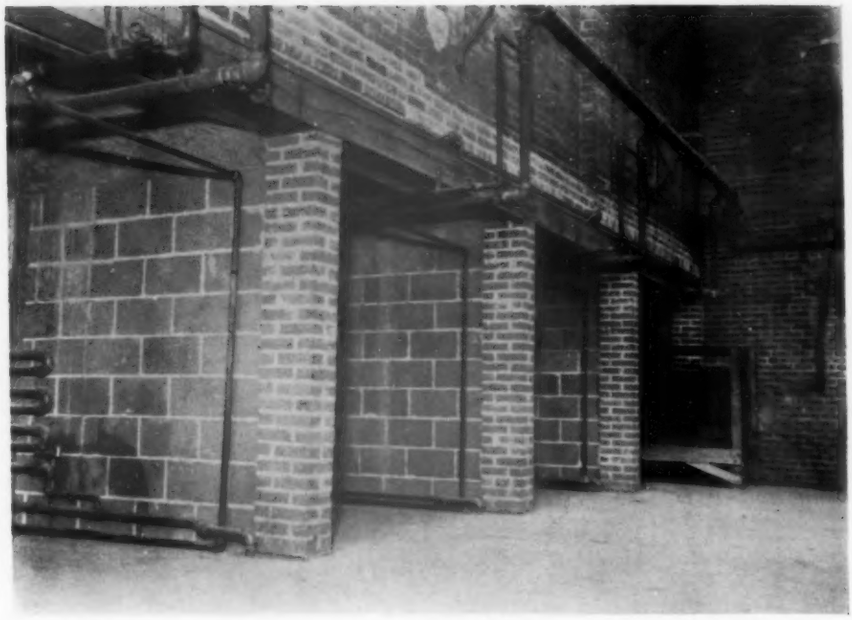
ABOVE — Architect's sketch of the Thomas Jefferson project. RIGHT—The site as construction was started. BELOW—Front and rear views of the block machine, mixer and skip loader.



THE Paducah Municipal Housing Commission, under loan contract with the United States Housing Authority, has two low-rent housing projects—the Thomas Jefferson, and the Abraham Lincoln—under construction at Paducah, Kentucky. Cinder-concrete blocks are being used for all partition walls and gravel-concrete units serve as back-up for the face-brick exteriors. A total of 287,000 concrete-masonry units will be used.

The contract for the blocks to be used on both projects, which are similar in design, is being filled by the Katterjohn Concrete Products Company, a new concern owned and operated by George W. Katterjohn & Son, the general contractor on the Thomas Jefferson project. Before designing and erecting the concrete-block plant, George Katterjohn, Jr., who has headed the concern since the death of his father, visited a number of existing plants to obtain ideas which might be helpful to him in his planning. As a result he has equipped an extremely well-designed plant in a building 125 by 50 feet which started operating the first of this year.

Gravel and cinders are received at the plant by motor-trucks. At present the cinders, purchased locally, are merely screened and the oversize is discarded. Later on Mr. Katterjohn expects to install cinder-crushing rolls and a magnetic separator.



A view of the curing rooms showing the arrangement of steam pipes.

The production equipment was supplied by the Stearns Manufacturing Company and includes an 18-cubic foot batch mixer, skip loader, and a No. 7 Joltcrete machine. The installation is unusually neat, safe and compact. The hopper extension above the Joltcrete machine is of welded-steel construction and has a by-pass from which concrete may be taken for other machines and purposes. A welded-steel ladder rises to the top of the hopper making access to it easy and safe. Sturdy guard rails fabricated from pipes have been erected around the mixer and skip-well. A small Curtis compressor supplies air for cleaning out inaccessible parts of the machinery, the air also being used to spray oil on the pallets and in the mold box. More than 10,000 Commercial cored-steel pallets are in stock at the plant.

The five curing rooms are 63 feet long, 8½ feet wide and about 8 feet high. The partition walls are of concrete block and the roofs are arched, 4-inch cinder-concrete slabs with built-up roofing applied above to retain the heat. Steam is supplied by a coal-fired American Radiator boiler, and the valves in the piping are arranged so that the heat and moisture lines in each of the kilns may be turned on or off separately. Rugged, well-designed timber racks were specially built to utilize the kiln space efficiently. Steam for moist curing is admitted through drilled holes in the moisture lines, placed near the floor in the kilns, one at each side, and extending the full length of the rooms. Swinging wooden doors close the yard ends while tarpaulins are temporarily being used on the plant ends. Mr. Katterjohn is having canvas doors with sheet-mica ports made for installation on the plants ends of the curing rooms.

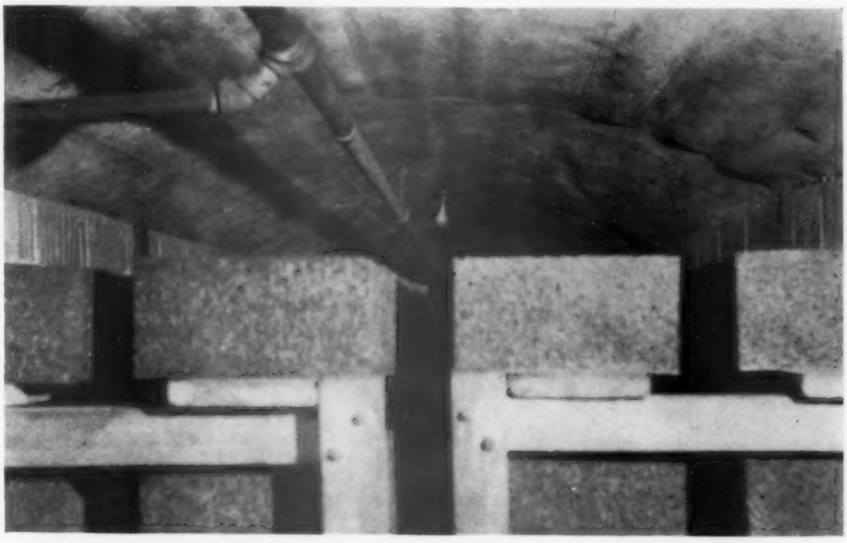
Two Barrett-Cravens lift-trucks are used to move the racks.

The floors in the plant and the yard area have been paved with concrete and a large stock of blocks is in storage in advance of delivery to the housing projects. Large quantities are also being sold commercially.

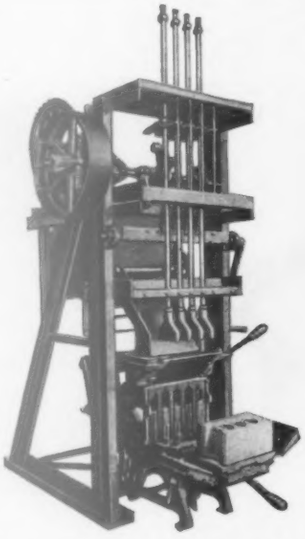
The Thomas Jefferson housing project, for which the Katterjohn company has the general contract, is located on a tract covering two city blocks. Fifty-five small, nondescript frame buildings were first razed to clear the site, and construction of the new buildings, begun in March, is scheduled for completion on or before December 15, 1940. The 13 buildings, each two stories high, will provide living quarters for 125 families. The buildings are of modern, fireproof construction, both floors being of concrete, poured on the job. The project is to cost $338,000, exclusive of the land.

A specimen of wall construction used on the housing projects.

The Katterjohn firm is also engaged in building a flood-wall stability-test structure for the United States Engineers near Paducah. Eight separate and distinct types of sheet-piling and reinforced-concrete walls are being incorporated in the box-like structure, which is 40 feet square. When completed it will be filled with water to a height of 20 feet and electric measuring devices will record deflection, permeability, etc., to determine which of the eight types of construction is most satisfactory for flood-wall construction.



Looking into one of the curing rooms showing the curved, cinder-concrete roof.



Recognized Everywhere

The Hobbs Jr. Face-Down Block Machine is recognized everywhere as the great general purpose machine of the concrete-products industry. Famous for its wide range of sizes and the variety of blocks it can produce. As illustrated, it is equipped with striking and finishing device, shown under the floor-type tamper and with power feeder.

Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers and Jolterete, Stearns mixers, and Cast Iron and Press Steel pallets, Straublox oscillating attachments, etc. Repair parts for: Anchor, Ideal, Universal, Stearns, Blystone mixers and many others.

ANCHOR CONCRETE MACHINERY CO.
G. M. Friel, Manager — Columbus, Ohio

COMMERCIAL

CORED Steel PALLETS

Cored pallets mean better curing and quicker curing, which cuts costs, and, because more blocks can be put on the rack or car, kiln capacity is increased.

They are cheaper to clean and oil. With cast iron cored pallets, rust is not a factor.

There is no alleged monopoly in the manufacture of cored pallet machines. Competition on this type of machine provides price protection for buyers.

THE COMMERCIAL SHEARING AND STAMPING CO.
YOUNGSTOWN, OHIO

Concrete being chuted direct to sidewalk forms from truck-mixer at Pensacola.

New Business Has Rapid Growth

IT is not often that a small ready-mixed-concrete producer not yet a year in this business, is called upon to supply concrete for construction projects which run into the millions of dollars. But this is exactly what happened to the Noonan Construction Company of Pensacola, Florida, a city of 31,579 population according to the 1930 census. This company in July, 1939, erected a central-batching plant to supply the concrete for a $135,000 state highway paving project in Pensacola. No sooner was this contract completed than a larger one was obtained to supply all the concrete for the new $7,500,000 Saufley Field. This is being built as an adjunct of, even though it is 10 miles from, the well-known Pensacola Naval Air Station which is often called the West Point of the air.

Comparisons of job mixing costs with ready-mixed concrete showed that the latter could be furnished more cheaply on individual pours of under 30 cubic yards. For this reason ready-mixed concrete is being used on small pours. Larger pours, which have ranged upward to 250 cubic yards daily, are supplied from a Rex 27 E paver which is at the site and delivers the concrete into the contractor's hoppers. The truck-mixers are loaded from a transfer bin at the job. Dry-batched aggregates for both systems are taken to the job in dump trucks which haul two batches per trip.

Considerable local commercial business has already been obtained and ready-mixed concrete is forming a steadily-growing percentage of the concrete used in Pensacola for various types of building. The present batching plant is located on the L & N Railroad about a mile from the heart of the city. Aggregates are transferred from cars to the batch hopper by a crane. A weigh-batcher with a beam scale is used and water is supplied from a measuring tank. Cement is added from sacks at a storage shed. The truck-mixer fleet at present consists of four Chain Belt Rex machines, two of 1½ and two of 2½ cubic yard capacity. All these are mounted on International truck chassis.

One of the Noonan trucks being charged at the batching plant.

By W. E. TRAUFFER

Lightweight Florida Lime-Rock Used Successfully in Block Manufacture

The concrete-block plant with the six curing rooms in the foreground.

IN the May issue of PIT AND QUARRY there appeared a description of the new and modern lime-rock crushing and lime burning and hydrating operations of the Cummer Lime & Manufacturing Company. Included therein was a brief history of the long and close connection of the parent company, the Cummer Lumber Company, with the history of the industrial development of Florida and the South which in recent years has been undergoing a rapid development.

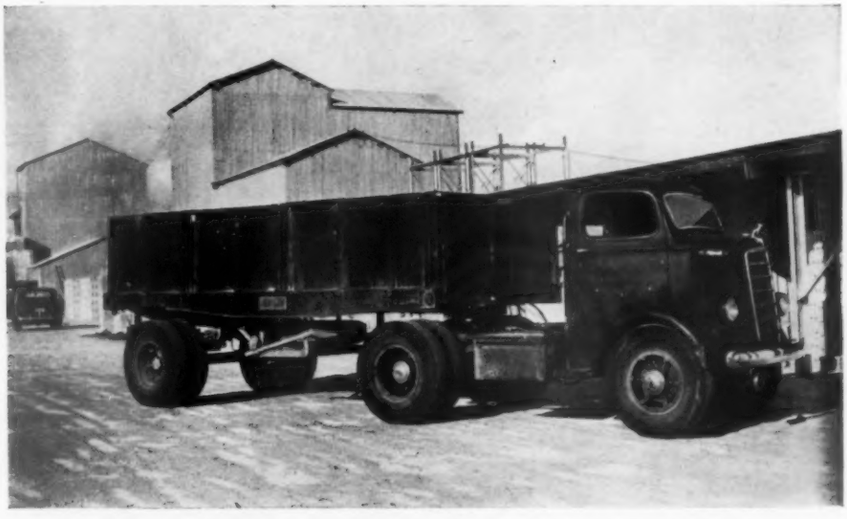
Pallets being fed to the block machine.

Not the least interesting of these new operations is the new concrete-block plant operated in conjunction with the above plants. This modern plant was put in operation early in 1939 after a long series of exhaustive tests had demonstrated the suitability of the native Ocala lime-rock for block manufacture. The company had long foreseen the gradual replacement of lumber by other building materials and is now prepared to meet these conditions with the only other native building material—lime rock—available in this part of the state.

Before venturing into this new field the company conducted a long series of tests to determine the suitability of the aggregate and of the finished product. The result is concrete blocks which not only are 20 per cent. lighter than sand-concrete blocks but which surpass all the requirements of the United States Government, the Underwriters' Laboratories and the A.S.T.M. An 8- by 8- by 16-inch, 3-cell standard block weighs 37 pounds. These blocks have a very low ratio of absorption and make a very good bond with mortar. They are used successfully with or without plaster and can be readily cut, carved or channeled without breakage.

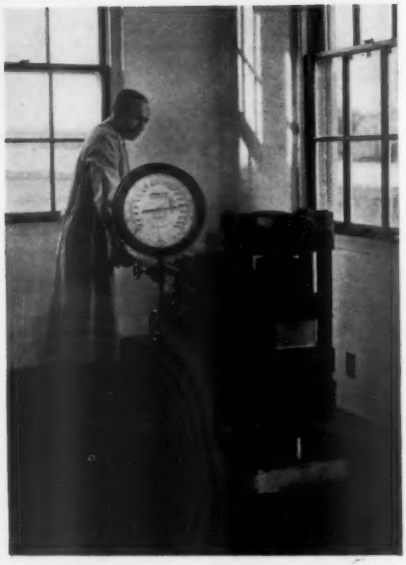
Tha business end of the plain-pallet stripper.

Although these blocks are sold at a price to compete with other building materials they are a quality product. Proof of this is the fact that blocks are shipped as far as 100 miles with an average shipping distance of 75 miles.

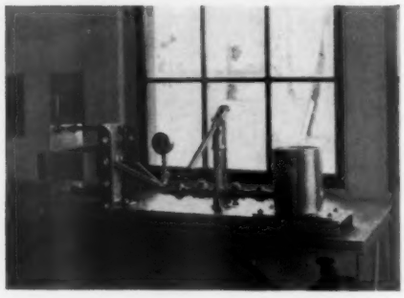


One of the trailer-trucks which deliver concrete blocks as far as 100 miles.

The CONCRETE MANUFACTURER

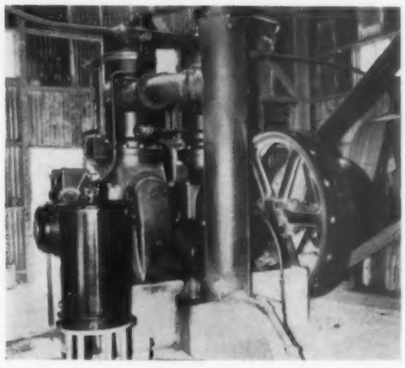


On this page are shown a few examples of different types of structures built with Cummer lime-rock concrete blocks. The smaller photos at the right show compression and moisture-penetration tests being carried out in the company's own well-equipped laboratory.



Some of the principal outlets are Jacksonville, Tampa, St. Petersburg, and Orlando, each of which cities has local block manufacturers. Sales are made entirely through building-material dealers, most of whom also sell lumber and other building materials. The company coöperates with its dealers by contacting architects, builders, etc., and by direct-mail and periodical advertising in newspapers, etc.

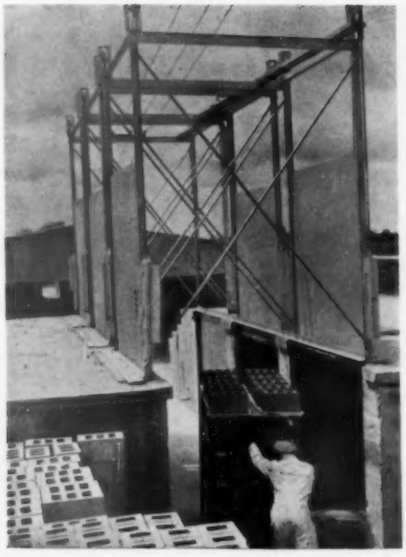
The rock used for block manufacture comes from an older quarry and plant and is slightly harder and more crystalline than that used in lime manufacture. This rock is quarried in the usual manner and is loaded by a steam shovel into trucks for haulage to the crushing plant, where it is reduced to 3½-inch size and under. This rock is then hauled ½ mile by truck to the block plant, where it is dumped into a pile on a ramp over a Jeffrey 12- by 20-inch hammer-mill. The ¼-inch minus product of this crusher contains about 25 to 30 per cent. of coarse material and is an ideal aggregate for concrete products.



The 125-hp. Diesel engine which can supply current for block plant.

This material is fed to a screw-conveyor from which another screw can feed it to a storage room from which it is shipped out as agricultural limestone. Usually the material is fed from the first screw to an inclosed bucket-elevator which feeds a 10-ton bin. An arc gate controls the feed from this bin into a volumetric batcher over the 1-cubic yard Besser roller-bearing mixer. Cement is dumped from sacks through a chute into the mixer. Concrete is discharged into the hopper of the Besser plain-pallet stripper.

The 12- by 20-inch hammer-mill with screw conveyor at left.



Blocks being moved into one of the six curing rooms.

This machine can make 2,000 standard 8- by 8- by 16-inch blocks in 8 hours with one man at the mixer, one at the machine and two men bearing off. By changing the molds many other sizes and special shapes of blocks can be made. The 8- by 8- by 16-inch and 4- by 8- by 16-inch units are very popular in this section. There is also a demand for 8- by 12- by 16-inch units for 12-inch walls of commercial buildings.

The 1-cubic yard concrete mixer with volumetric batcher above.

The blocks are stowed on steel racks which are moved by means of hydraulic lift trucks into 6 monolithic-concrete curing rooms each of which holds about ½ day's output. Air-atomized water sprays keep the humidity in these rooms near 100 per cent. Air-tight steel curtain doors at one end allow the hydration of the cement to keep the heat at about 100 deg. F. After 3 days the blocks are removed to a 50- by 110-foot open side storage shed with overhead sprays where they remain for 3 or 4 weeks before they are moved out of doors. No blocks are sold under 30 days, eliminating any possibility of shrinkage in the wall and resulting troubles. Most of the output is shipped in trucks.

At this concrete-block plant is also produced pulverized high-calcium limestone for soil application. This phase of the limestone business has been given impetus by the recent development of excellent pasture grasses and clovers.

This plant is usually operated with purchased power. It can also be operated from current generated by a 125-hp. Fairbanks-Morse Diesel engine.

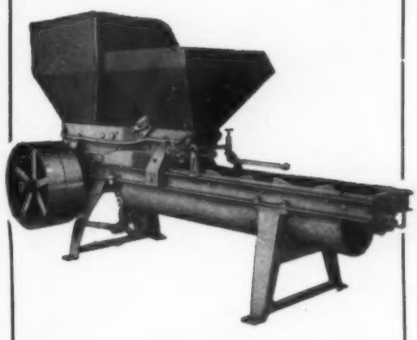
The Cummer company maintains its own well-equipped chemical and physical testing laboratory, which has a 200,000-pound-capacity Watson-Stillman hydraulic compression-testing machine, a Sargent drying oven, an absorption-testing cabinet, a leakage-pressure-testing machine, etc. This laboratory occupies part of the company's modern monolithic-limerock-concrete office building.

FOR SALE

Universal Stripper with Conveyor and Mixer,
5"-8"-10"-12" Pallets with corners.
Br. Header Att. for Anchor.
4" and 5" Att. for Anchor.
Clark Lift truck.
80 Cu. Yd. per hr. Gravel Washing Plant.
12 Cu. Ft. Mixer.
Concrete Conveyor.
2—1½ Yd. Ready Mix Trucks.
1—150 Lb. Cap. per hr. Stoker.

PYRAMID BLOCK COMPANY
West Allis, Wis.

THE KENT CONTINUOUS MIXER



For

CONCRETE PRODUCTS PLANTS

Eliminate Labor Cost by Installing a Kent Continuous

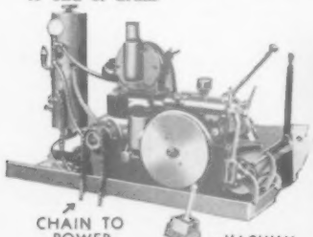
THE KENT MACHINE CO.
CUYAHOGA FALLS, OHIO

Now, a COMPLETE Line o WITH FEATURES JAEGER A

1 to 5½ Cu. Yd. HEAVY DUTY MIXERS for Steady High Production

JAEGER 2 YD. STANDARD HEAVY DUTY MIXER

THIS END-TO-END DUAL-MIXING ACTION WITH THROW-BACK BLADES PRODUCES HIGHER STRENGTH CONCRETE. Proven by authoritative Hollister Tests of over 2000 cylinders. Note reversing action of Throw-Back Blades and method of spraying water from end to end of drum.



Only Jaeger offers TRUCK ENGINE DRIVE under Vacuum Control from Cab

FASTEST KNOWN DISCHARGE — any slump — no segregation

Standard or "HIGH DUMP"... Insures Faster Discharge of from Properly TOP LOADED

JAEGER STANDARD TRUCK MIXERS, AGITATORS lead all others in sales because of their high production, made possible by faster, 2-speed mixing and discharge, plus wide demand for the HIGHER STRENGTH CONCRETE which Jaeger has been proven to produce. These units meet every specification or demand.

The features which have made Jaeger first choice of the ready-mixed industry are exclusive: THROW-BACK REVERSING BLADES, essential to rapid end-to-end mixing — SYPHOMETER WATER TANK, to measure accurately under road conditions, with DUAL-REVOLVING WATER SPRAYS to distribute water 100% faster and more uniformly — CAB-CONTROLLED TRUCK ENGINE DRIVE or SEPARATE ENGINE DRIVE, thru SHOCK-PROOF 2-SPEED TRANSMISSIONS giving range of mixing speeds for long or short hauls or agitation.

COMPACT DESIGN permits better load distribution and use of short wheelbase trucks. FINEST AUTOMOTIVE CONSTRUCTION results in LOWEST MAINTENANCE COSTS.

Available in sizes up to 5½ cu. yd. as Truck Mixers, up to 7½ cu. yd. as Agitators.

MORE CONCRETE IS SOLD BY JAEGER TRUCK MIXERS A

of Truck Mixers, Agitators ALONE CAN OFFER . . .

2, 3 and 4 Cu. Yd. HIGH DUMP MIXERS for Difficult Problems of Placement

2 YD. HIGH DUMP ON SHORT WHEELBASE FORD-TYPE TRUCK

the Same Mixing Action HIGHER STRENGTH Concrete Drums—New Sizes Boost Pay Load

JAEGER "HIGH DUMP" TRUCK MIXERS, AGITATORS offer advantages never before available in high discharge type truck mixers:

NEW OVER-SIZE 2, 3 AND 4 YD. DRUMS TAKE ALL THE LOAD YOUR TRUCK CAN CARRY, IN ONE QUICK DUMP THRU THE TOP — no obstructing blades or chute as on end-loaded mixers, maximum payload without crowding drum — no jeopardizing of the quality of the mix, no dead weight of loading hopper on end of drum.

FAMOUS JAEGER DUAL-MIX ACTION, with water introduced into batch at any desired time, insures faster mix and much faster discharge, especially on low slump. FLIP-OF-FINGER VACUUM CONTROLLED DISCHARGE DOOR, "WINTER-SAFETY" WATER BOOSTER, "UNI-VALVE" control of mixing, tempering and flush water, COMPACTNESS permitting 2 yd. unit to mount on short wheelbase trucks, plus 2-SPEED CAB-CONTROLLED TRUCK ENGINE DRIVE or SEPARATE ENGINE DRIVE, and other Jaeger features described on opposite page. Write today for new catalog—prices—easy, extended terms.

THE JAEGER MACHINE CO., 602 **Dublin Ave., Columbus, Ohio**

Dump into Floor Hoppers or Big Buckets

"HIGH DUMP" MEETS UNUSUAL CONDITIONS Fits into Needs of Smaller Communities as Well as Fleets of Heavy Production Mixers.

Chute into Forms Over Dirt Piles

S AND AGITATORS THAN BY ANY OTHER METHOD

THE BROOKS-TAYLOR
Lime Putty Plant

Why not take advantage of any up-swing in building that might come your way? You can do it to best advantage by installing a Brooks-Taylor lime putty plant and delivering ready-mixed mortar made from aged lime putty. Each putty plant operator has experienced an increase in volume. The capacity of the plant shown here, at Indianapolis, has been doubled by the addition of a third ageing tank. Write for information.

CHICAGO BRIDGE & IRON COMPANY

Chicago ....2451 McCormick Bldg.
New York.....3389—165 Broadway
Cleveland....2264 Rockefeller Bldg.
Philadelphia.1645—1700 Walnut St.
Boston.1550 Consolidated Gas Bldg.
Houston.....918 Richmond Ave.
Tulsa .....1648 Hunt Bldg.
Birmingham.1503 North Fiftieth St.
Dallas.....1686 Praetorian Bldg.
Detroit.....1552 Lafayette Bldg.
San Francisco....1092 Rialto Bldg.
Los Angeles...1457 Wm. Fox Bldg.

In Canada: HORTON STEEL WORKS, LIMITED, FORT ERIE, ONT.

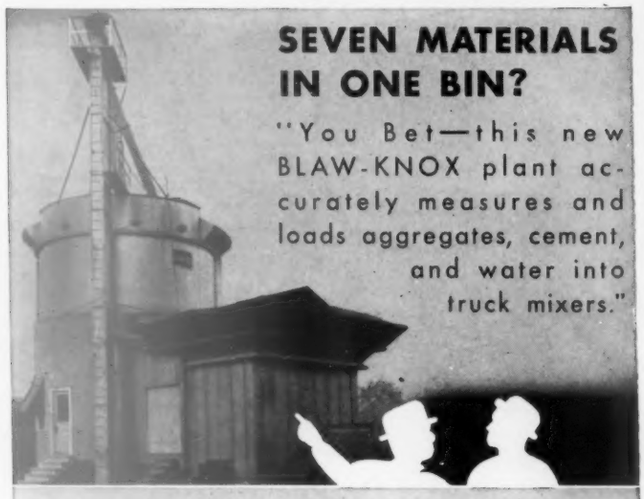
Miles
CONCRETE EQUIPMENT

INVESTIGATE
BEFORE YOU BUY

the PIONEER EQUIPMENT of the industry, not an experiment, but a proven success with which you are assured a larger production of high quality blocks at both a lower first cost and a lower operating cost, facts well worthy of your serious consideration.

WRITE FOR CATALOG

THE MILES MANUFACTURING CO.
Dept. 20
JACKSON, MICHIGAN



SEVEN MATERIALS IN ONE BIN?

"You Bet—this new BLAW-KNOX plant accurately measures and loads aggregates, cement, and water into truck mixers."

Blaw-Knox Truck Mixer Loading Plants include overhead storage bins for aggregates and cement; accurate Weighing Batchers for aggregates, cement and water; arranged for manual or automatic operation; complete conveyors for handling materials from cars or trucks to bins, when desired—all properly designed and built to your requirements as an efficient unit for truck mixer loading. See Blaw-Knox Catalog No. 1582.

15

BLAW-KNOX BLAW-KNOX DIVISION • OF BLAW-KNOX CO. • Farmers Bank Bldg. Pittsburgh, Pa.
TRUCK MIXER
LOADING PLANTS

See
WOODSTOCK
TYPEWRITERS

Advertise your wants and surplus equipment in

PIT QUARRY

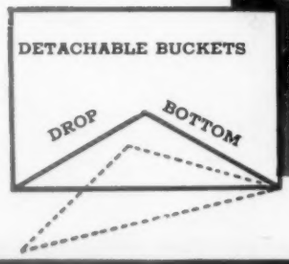
DEMPSTER DUMPSTER

Heavy-Duty Units

DEMPSTER-DUMPSTER models 300 LF and 400 LF are built for tough tasks and hard, continuous use. They are furnished in sizes up to 6 cubic yards as standard equipment . . . larger units on special order. One unit serving as many as 10 buckets does the work of five trucks.

Notice the sturdy construction. The center of gravity of the load is carried well ahead of the rear axle, contributing to long life and low maintenance. Get the facts today. There's a dealer near you, or write us direct.

- No High Pressure Hose
- No Counterweight
- No Auxiliary Jacks

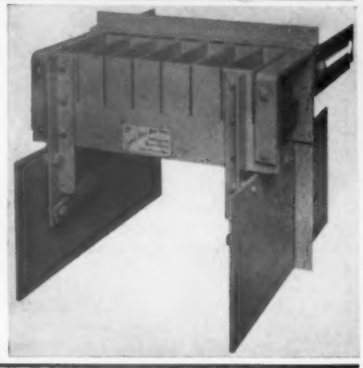


Above is Model 300 LF (3 cu. yds. water level).

DEMPSTER BROTHERS, Inc. KNOXVILLE, TENNESSEE

LITTLE DAVE BRICKMAKER

Let LITTLE DAVE get you a profitable share of the brick business. He will pay for himself in one week in your plant. He makes 3000 smoothly troweled, sharp-edged brick per day also double brick, triples, etc. Now is the time to put LITTLE DAVE to work. Write for details —TODAY!



R. F. REED COMPANY 412 E. Michigan Avenue THREE RIVERS, MICHIGAN

"WATER CONTROL?

The BLAW-KNOX TRUKMIXER has the most accurate water measuring systems for all positions of the tank"

THE BLAW-KNOX WATER MEASURING SYSTEM

Tests show—only Blaw-Knox TKUKMIXERS have this accurate, practical, dependable water measuring system. Described in Bulletin No. 1643.

Buy Blaw-Knox Trukmixers. Get the advantage of automatic accurate water measurement, together with many other exclusive features.

20

BLAW-KNOX BLAW-KNOX DIVISION OF BLAW-KNOX CO. Farmers Bank Bldg. Pittsburgh, Pa.

TRUKMIXERS *and Agitators*

"NAT-ALOY" LOCK CRIMP MESHES ASSURE ACCURACY FOR THE LIFE OF SCREEN

"LONG WEARING"

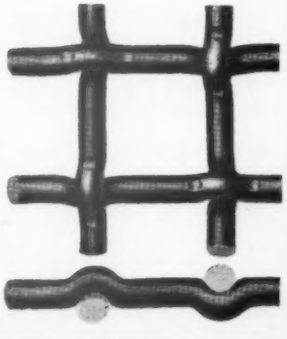
TOUGH SCREENS THAT RESIST ABRASION, WILL NOT CRYSTALIZE.

FURNISHED ALSO IN FLAT TOP AND DOUBLE CRIMP MESHES.

STOCK SHIPMENTS

WRITE FOR NEW CATALOG NO. 51

National Wire Cloth Co., Inc.
200 W. Fairfield, St. Paul, Minn.



REDUCE THOSE SURPLUS AGGREGATES TO PROFITS

WITH A JACKSON CONCRETE BRICK MACHINE

NO PALLETS: The concrete is compressed so firmly that the bricks are removed by hand and piled on top of each other on flat-deck, lift-truck platforms or cars each holding 1,000 brick (this simplifies production tallies).

CHEAPER PLATFORMS: Since no pallets are used, the expensive tier type platform is done away with and only a flat deck platform is required. By setting a rack on top of these platforms, they can be used for concrete blocks. This does away with two sets of platforms where both brick and block are being manufactured.

LOW FIRST COST: Because cheaper platforms are used and no pallets are needed, the first cost is considerably lower with a Jackson brick machine installation.

LOWER OPERATING COSTS: Because no pallets are used a great deal is saved in handling and maintaining thousands of pallets as well as providing storage space for them when not in use.

HIGH PRODUCTION: Up to 14,000 brick in an eight hour day can be made on the Model "C" brick machine which has six pocket molds in the rotary table. The Model "A" brick machine, which has twelve pocket molds, produces up to 28,000 bricks a day. This is by far the fastest producing concrete brick machine on the market today.

CLEAN, SHARP-EDGED BRICK: Because the brick are picked off the top of the plungers as they are forced up through the table pocket, they retain all of their clean cut sharp edges, thus making good looking and more salable brick.

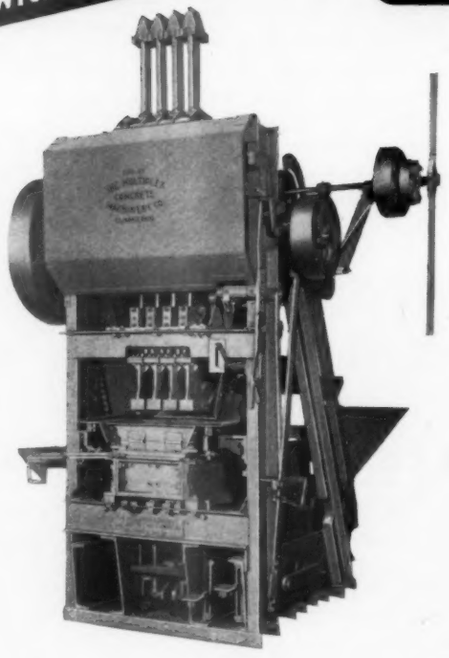
WRITE TODAY FOR ILLUSTRATED FOLDER

JACKSON & CHURCH CO.
SAGINAW, MICH.

Hitting 8 on All

A NEW HIGH IN QUALITY CONCRETE BLOCK PRODUCTION

MULTIPLEX Super Tamper with 8-Bar Tampers

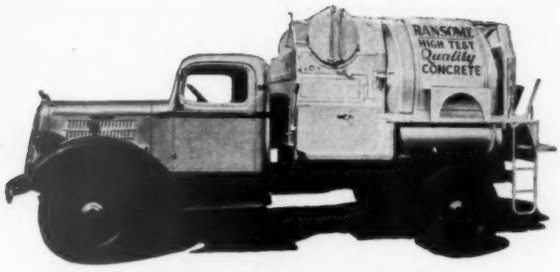


IT'S MAKING A BIG HIT WITH BLOCK PRODUCERS—our new Super Tamper equipped with 8-bar tampers is setting profit records in the concrete industry.

This machine is built extra sturdy throughout, with heavy ship channel welded frame and best quality parts. Split bar front and rear tamping and patented type feet permit a wetter mix with less tamping required. Counter balance cam shaft eliminates vibration. Automatic and positive pusher type feeder. Quick acting 5 point clutches—no delay between operations. Capacity 4 to 6 perfectly formed blocks per minute, in all standard sizes and faces.

Write for your copy →

The Multiplex CONCRETE MACHINERY COMPANY
ELMORE, OHIO



THE LAST WORD
IN
TRUCK MIXERS

Ransome

Scientific mixing — (in the Drum Barrel not in the Cones). Discharges clean and perfectly—no dripping from the door. Well, it's everything any operator has ever dreamed for.

Write for our latest catalog

RANSOME CONCRETE MACHINERY CO.
DUNELLEN, NEW JERSEY

IN DRY GROUND . . . OR UNDER WATER

Dig and Haul

Gravel bank 80 ft. high and 1,000 ft. wide is cut down and moved to plant by a 2 cu. yd. SAUERMAN Scraper.

Excavation of gravel from river beds and bars is a specialty of SAUERMAN Slackline Cableways.

. . . for a few cents per cubic yard

DIG SAUERMAN Power Drag Scrapers and Cableway Excavators will dig any material that can be turned with a plow — will dig with equal efficiency under water—will handle loose rock, gravel, sand, earth or aggregate.

HAUL Operating most effectively over 100 to 1500 ft. spans, a SAUERMAN Machine will haul 10 to 1000 cu. yds. per hour with a minimum of labor cost, maintenance and daily operating expense.

DUMP SAUERMAN Machines are specially designed and adapted to automatically dump their loads any place over a 1500 ft. span. Easily and completely operated by one man.

Write today for illustrated catalog and complete information on SAUERMAN Machines.

SAUERMAN BROS., Inc.
434 S. Clinton St. Chicago, Ill., U.S.A.

QUINN PIPE FORMS

HAND or WET PROCESS

Make concrete pipe on the job with *Quinn Pipe Forms*. Quinn Pipe Forms can be handled by less experienced labor and produce uniform concrete pipe of highest quality. The recognized standard of all concrete pipe.

HEAVY DUTY
CONCRETE PIPE FORMS

Built to give more years of service—sizes for any diameter pipe from 12 to 84 inches—tongue and groove or bell end pipe — any length. Backed by years of service in the hands of contractors, municipal departments and pipe manufacturers.

NEW
MEDIUM DUTY
CONCRETE PIPE FORMS

Meet the demand for low cost equipment that produces a uniform quality of pipe in smaller amounts. Complete in every way. Stands up on any job. Same sizes as "Heavy Duty," from 12 to 84 inches—any length.

Write Today

Get complete information on prices and Special Construction features of Quinn Pipe Forms. Give us size of job for estimate on your pipe form needs.
Also manufacturers of concrete pipe machines for making pipe by machine process.

QUINN WIRE & IRON WORKS
1627 TWELFTH ST., BOONE, IOWA

The CONCRETE MANUFACTURER

PROVEN EARNING POWER

When DUNBRIK Manufacturers show sales of three million brick per year with production costs as low as $5.00 per thousand—others with selling price of 100% over cost—proves the great earning power of this line-production brick machine.

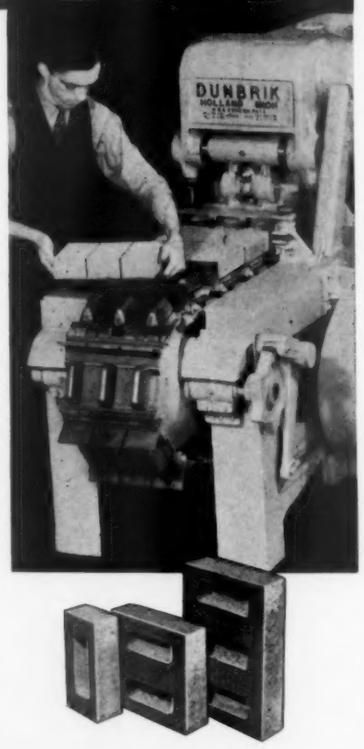
These enviable records are the result of producing a superior product,—lighter weight, greater strength, lower absorption, absolute accuracy, and with true corners. In addition, multiple sizes of standard brick (DUNSTONE) can be produced that permit hollow, insulated wall construction at cost level of frame.

Write today for new book "4 Keys to Success" and learn about this wonderful machine, permitting large production with only one or two men and costing but a fraction of what would be required for other processes of equal capacity.

DUNTEX ROOF TILE MACHINE

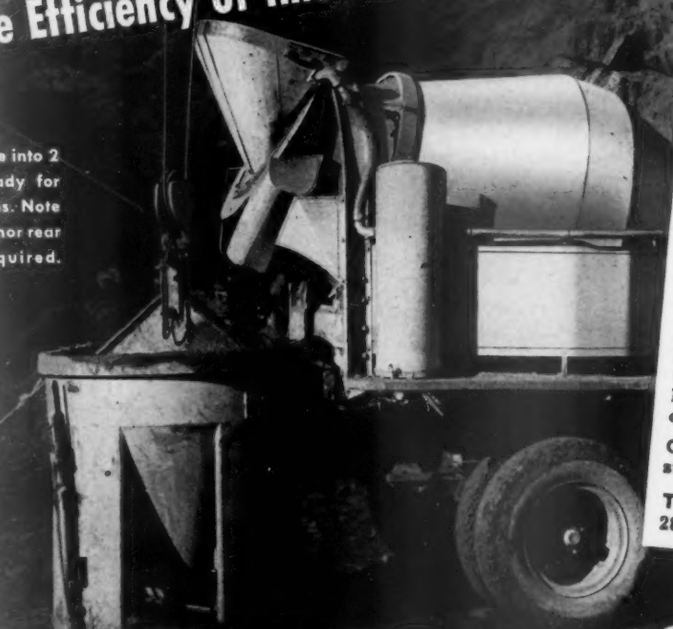
With this machine you can dominate the vast roofing material market with a product unequalled in value, permanence, beauty and fire-safety. Your manufacturing costs are low, investment moderate, and selling prices offer attractive profit.

Send today for "DUNTEX Survey"



W. E. DUNN MFG. CO.
420 W. 24th St. Holland, Michigan

VISIBLE MIXING plus HIGH DISCHARGE add to the Efficiency of this Pacific Coast Job!



Discharging concrete into 2 cu. yd. buckets ready for delivery to the forms. Note that neither ramps nor rear end hoists are required.

2 Reasons . . .

Why Smith-Mobile Truck Mixers were used for mixing and delivering concrete on this large West Coast railroad bridge job:

1. Smith-Mobile's VISIBLE MIXING feature complied with the specifications for inspecting concrete during the mixing period. While the drum is revolving, you can open the door and SEE what's going on inside the drum . . . actually watch it mix. The ONLY revolving drum truck mixer with this important feature.

2. Smith-Mobile's HIGH DISCHARGE feature permits discharge directly into concrete placing buckets without resorting to the use of ramps or rear end hoists. You can't do this with any other truck mixer.

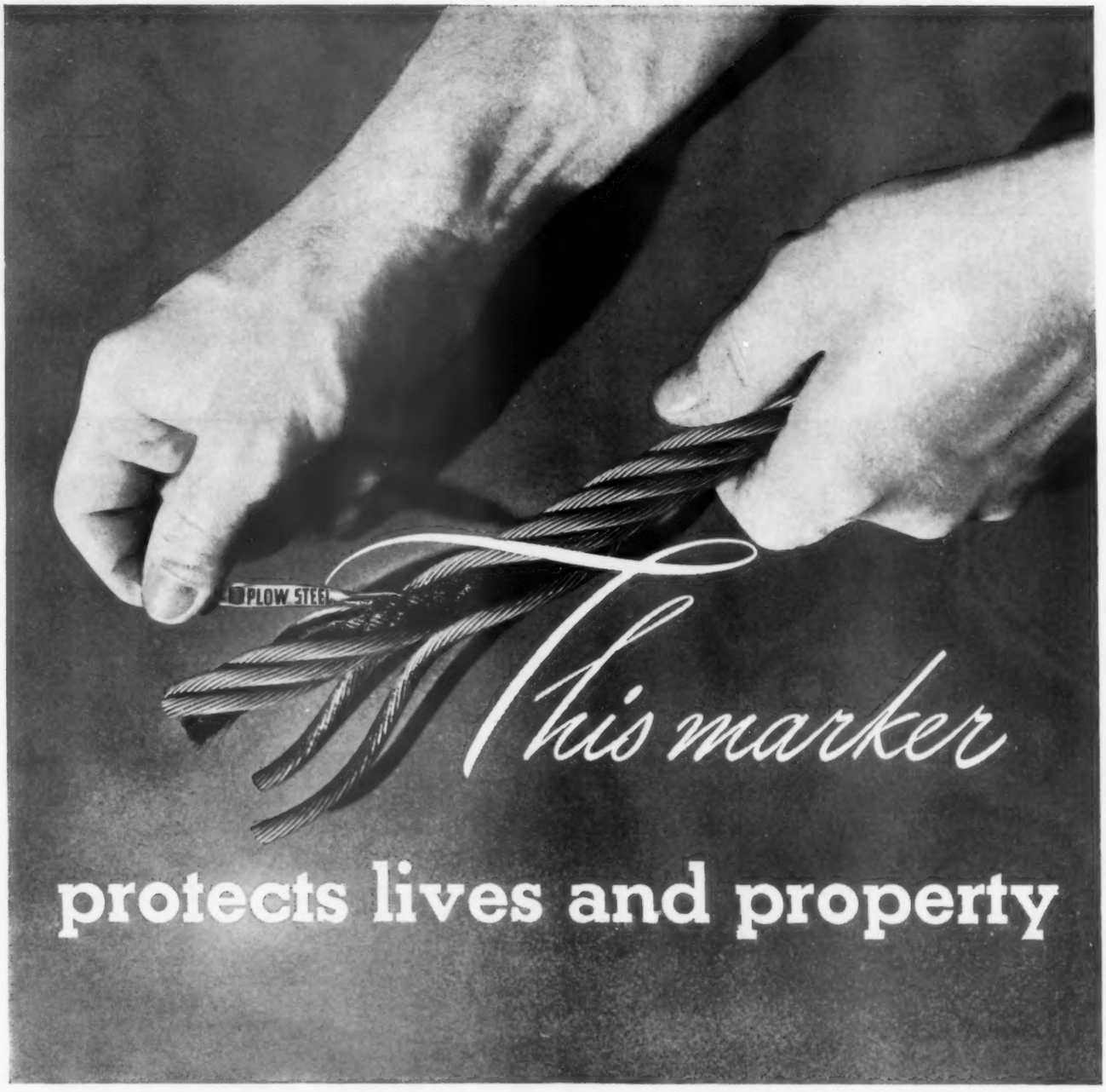
Get the complete Smith-Mobile story. Ask for copy of Catalog 198.

THE T. L. SMITH COMPANY
2887 N. 32nd St., Milwaukee, Wis.

SMITH-MOBILE

The Modern TRUCK MIXER and AGITATOR

A 2899-½H



An exclusive identification tape is built into every foot of Bethlehem Wire Rope. This tape—known as Telfax—is clearly marked with the grade of steel in the rope. As a double check, each tape bears a distinctive color—purple—Purple Strand; green—Plow Steel; red—Cast Steel, and so on.

Telfax tape is a positive protection for workmen and property. It eliminates the possibility of using the wrong grade of rope on a dangerous or critical job.

Telfax tape is laid next to the core. Regardless of whether the rope has been respooled or comes to you in cut lengths, with all markings lost, you can check it quickly and easily with the Telfax identification tape.

BETHLEHEM STEEL COMPANY

BETHLEHEM STEEL

Pit and Quarry Helps You Operate More Profitably

Every issue of PIT AND QUARRY is full of information you can use in your business. It gives you practical ideas on every phase of your operations.

To keep its readers fully informed, PIT AND QUARRY taps every source. Our field editors travel more than 30,000 miles a year to describe the processes and methods used by the outstanding plants making your type of product. Government activities affecting the field are interpreted so that you can better adjust your business to their regulations. Complete reports of all important conventions are published in PIT AND QUARRY. The new equipment and supplies which may make production more efficient are announced in each issue.

Reading PIT AND QUARRY is like having a conference every month with the leading men in your industry. You don't have to stir out of your chair to get information that otherwise would take you years to obtain by your own efforts and experience.

The cost of this service is only $1 a year. Start your subscription at once by just filling and mailing the coupon below.

Return This Coupon To-day—Start Your Subscription with the July issue

PIT AND QUARRY PUBLICATIONS,
538 So. Clark Street, Chicago, Illinois.

Enclosed find remittance for which enter my subscription to Pit and Quarry for .....
1 year ($1.00) ..... starting with the July issue. (Foreign add $1.00 per year.)

My Name..... ..... Title.....

Company Name .....

Send to (Address).....

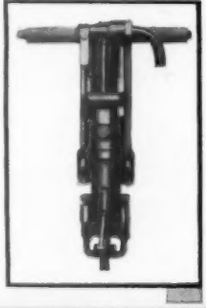
We Produce..... .....

NOT A PENNY FOR REPAIRS · · ·
NOT A SINGLE FORCED SHUTDOWN · · ·
In 10 Months of Constant Operation!

THESE two Gardner-Denver WBG V-belt driven compressors are working from 12 to 16 hours every day in a quarry operated by Pinnell & Pfost, in West Virginia. Both machines have been in constant operation for more than 10 months. During that time, not a penny has been spent for repairs or adjustments, and the only shutdowns have been for the regular oil change, which usually is made at every 120 hours of operation.

The remarkable economy of these Gardner-Denver compressors is shown by the fact that between oil changes, the compressors use only 1 quart of oil. Oil is added only infrequently, however, since the crankcase has sufficient capacity to make a 1 quart depletion scarcely noticeable.

Gardner-Denver "WB" motor driven, gasoline or Diesel engine driven compressors require little foundation. They are especially adapted to quarry work—built to cut power and maintenance cost for their owners! Complete information will be sent on request. Write! Gardner-Denver Company, Quincy, Illinois.



Gardner-Denver S-55 Sinking Drill used on this job.

GARDNER-DENVER
SINCE 1859

YOU'VE GOT TO HAVE TRACTION

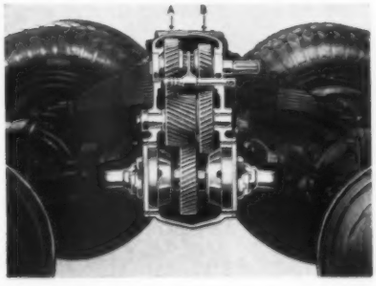
For heavy duty work two driving axles under the load are better than one.

Save money! Take a truck of 1½ to 3 tons original capacity and quickly convert it to a unit of 30,000 lbs. or more gross vehicle weight capacity. Two ratios, for power and speed. Walking beam flexibility!

with the

THORNTON four-rear-wheel DRIVE

Special spring construction keeps equal load on all four driving wheels—Perfect balance between power and weight. Speed ranges easily controlled from cab.



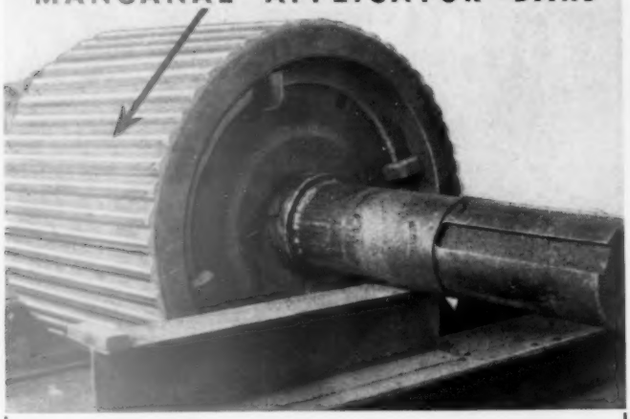
THORNTON two-speed transmission cut away to show the two trains, A and B, massive helical gears—one ratio for power and the other for speed—easily controlled by a lever in the cab.

THORNTON TANDEM CO.
8701-8779 Grinnell Ave. Detroit, Mich.

Manufacturers also of the THORNTON automatic-locking DIFFERENTIAL which gives traction when slippery going makes trucks equipped with ordinary differentials helpless.

"When you need TRACTION you need THORNTON"

MANGANAL APPLICATOR BARS



Carbon steel cement-rock crusher roll armored with 1-inch diameter MANGANAL 11 to 13½% Manganese-Nickel Steel Applicator (filler) Bars. Attached by welding with MANGANAL Welding Electrodes.

●

Many cement and quarry operators are using MANGANAL to reclaim CRUSHER ROLLS—JAW AND GYRATORY CRUSHERS — HAMMER-MILL HAMMERS — PULVERIZERS — GRINDING MILLS — LINERS — SHOVEL DIPPERS—TEETH—ETC.

MANGANAL is an Austenitic, non-magnetic, air-toughening manganese-nickel steel having all the desirable characteristics of 11 to 14% manganese steel. In addition, under severe impact, it work-hardens on the surface faster, showing less initial wear. MANGANAL does not become brittle when exposed to heat, and weld deposits made of this remarkable metal do not chip or spall off even under the most severe conditions.

Machinery is bound to grow old, to wear out, despite careful maintenance. Don't condemn the equipment, rely on MANGANAL Applicator Filler Bars, Welding Electrodes, Forged Wedges, Wedge Bars and Plates to make it like new again. Write for complete information.

●

STULZ-SICKLES CO.

Sole Producers

134-142 Lafayette St. ∴ NEWARK, N. J.

MANGANAL

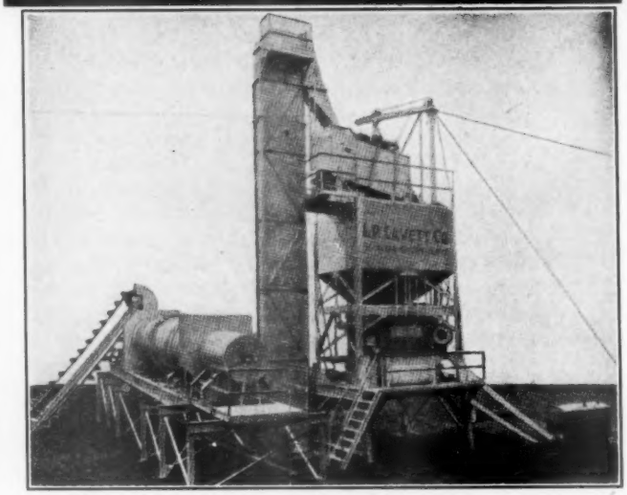
TRADE MARK REG. U. S. PATENT OFFICE

BARBER-GREENE

BUCKET LOADERS offer by far the cheapest means of loading bulk materials from ground storage to trucks. The B-G line of bucket loaders have many unique advantages. B-G Loaders are built in sizes for every loading requirement. Write for literature. Q9

BARBER-GREENE
AURORA, ILLINOIS

BITUMINIZED AGGREGATE



P-A TYPE PORTABLE PLANT

MODERN STATIONARY AND PORTABLE MIXING PLANTS OFFER A NEW OUTLET FOR AGGREGATE PRODUCERS

SEND FOR DESCRIPTIVE LITERATURE

HETHERINGTON & BERNER INC.
ENGINEERS AND MANUFACTURERS
701-745 KENTUCKY AVENUE • INDIANAPOLIS, INDIANA

TY
REDUCTION CRUSHER

THE MACHINE THAT HAS MADE MORE THAN THREE HUNDRED USERS HAPPY

Every dollar paid for (and the price is not high), and every dollar spent upon (they are comparably few), a Traylor Type TY Reduction Crusher, have returned full value—AND A PROFIT—to over three hundred users widely scattered and engaged in practically every variety of service. * * * Bulletin 2112 tells why you, also, can benefit by installing a "TY." Write for it!

INVESTIGATE OUR TYPE H BLAKE CRUSHER (BULLETIN 1105), AND OUR MULTI-STAGE FINE REDUCTION CRUSHER—(BULLETIN 113).

TRAYLOR
ENGINEERING & MANUFACTURING CO.
MAIN OFFICE AND WORKS — ALLENTOWN, PENNA., U.S.A.

NEW YORK CITY 3916 Empire State Bldg.
CHICAGO 815 One La Salle St. Bldg.
SALT LAKE CITY 101 West Second South St.
LOS ANGELES 919 Chester Williams Bldg.
SEATTLE 6311-2nd Ave. N. E.

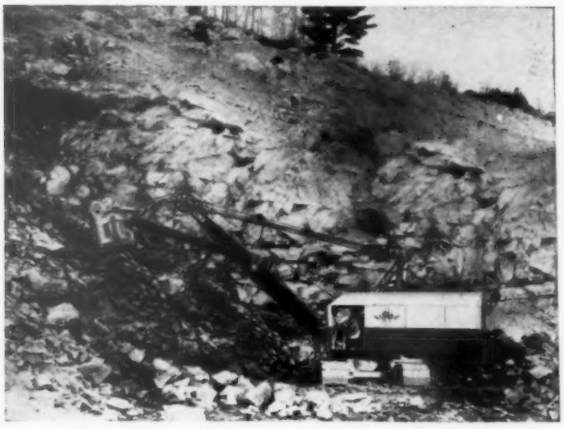
B. C. EQUIPMENT CO., LTD. 551 Howe St., Vancouver, B. C.
MANILA MACH. & SUPPLY CO., INC. Manila and Baguio, P. I.
MAQUINARIA INTERNACIONAL, S. R. L. Av. Francisco I. Madero No. 17, Desp. 214, Mexico, D. F.

Export Department—104 Pearl St., New York City. Foreign Sales Agencies: London, Lima, Sao Paulo, Rio de Janeiro, Buenos Aires, Santiago, Valparaiso, Antofagasta, Oruro

---

30′ BOOM
20′ DIPPER HANDLE
3 YARD DIPPER
OR
42′ BOOM
32′ DIPPER HANDLE
2½ YARD DIPPER

DRAGLINE CAPACITIES VARIABLE



DIESEL OR ELECTRIC POWER

FAST, MOBILE CRAWLERS

INDEPENDENT CLUTCHES

WIDE WORKING RANGES

BOOST YOUR OUTPUT WITH A LIMA TYPE 1201

The LIMA Type 1201 convertible shovel and dragline, points the way to greater economy and bigger profits in hard rock digging. Performance proves that it is the right machine for quarry work. It has the power and ruggedness of a big machine, with the speed and economies of the smaller type.

As a shovel, it is equipped with a 30′ boom, 20′ dipper handle and 3 cubic yard dipper. However, longer booms and dipper handles can be furnished. For maximum efficiency, long profitable life and greater output, you can't buy a better quarry shovel.

LIMA LOCOMOTIVE WORKS, INCORPORATED

SHOVEL AND CRANE DIVISION — **LIMA, OHIO, U. S. A.**

ALLIGATOR
for *Extra* belt lacing hours

Drives straight
Compression grip protects belt ends
Smooth on both faces
Embeds in belt
Rocker hinge pin
Joint easily separated

One of our lunch hour statisticians estimates that two hundred million belts have been laced with Alligator steel belt lacing since its introduction thirty years ago.

If these belts could all tell their story of performance it would be summed up in "*extra* belt lacing hours."

Since the original patent expired there have been many lacings that looked like Alligator. But fortunately for Alligator the making of belt lacing is a highly specialized job. Years of research, backed by thousands of dynamometer tests plus better alloy steels and the constant improvement in die making and stamping practice, have been responsible for these *extra* belt lacing hours.

Every plant should have a supply of Alligator steel belt lacing on hand. Twelve sizes for flat belts of all types up to ⅝" thick. Special lengths for wide belts. Also made in "Monel" and "Everdur.' Order from your supply house.

FLEXIBLE STEEL LACING CO.
4623 Lexington St., Chicago, Ill.

15 EDITIONS and still going strong

● Here is a 72-page pocket size manual, "Short Cuts to Power Transmission," that presents a wealth of practical information about transmission and conveyor belts. Offers pointers on how to care for belts, methods of lacing, how to repair conveyor belts, etc.

WRITE FOR YOUR COPY

ALLIGATOR
TRADE MARK REG. U.S. PAT. OFFICE
STEEL BELT LACING

Lower YOUR Costs Per TON-MILE

DAVENPORT LOCOMOTIVES

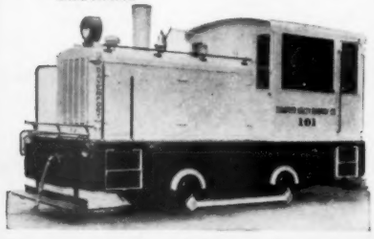
STEAM
•
GASOLINE
•
DIESEL
LOCOMOTIVES
MECHANICAL
or
ELECTRIC
DRIVE

Keep things moving—quickly, easily and at lowest operating expense — with modern Davenport Locomotives. For over 40 years these sturdy, lasting units have kept pace with improved methods and have proven their worth in service.

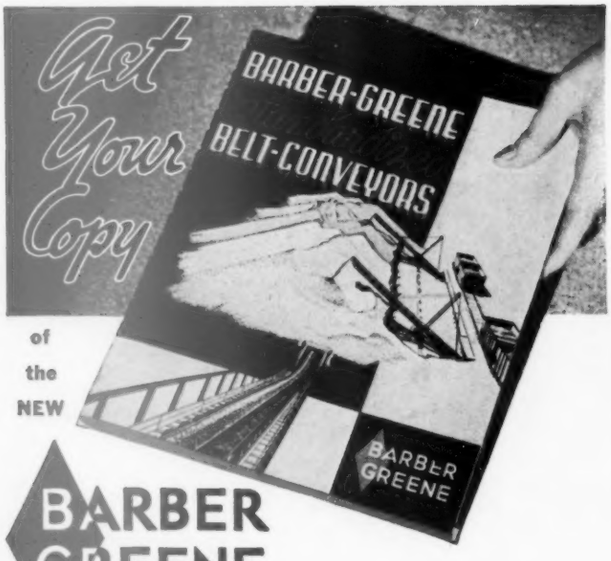
Davenport engineers will consider it a privilege to assist you in thoroughly analyzing your haulage requirements.

Export Office
BROWN & SITES
30 Church St.,
New York
Cable Address
"BROSITES"

Complete information is yours for the asking.



DAVENPORT LOCOMOTIVE WORKS
A DIVISION OF DAVENPORT BESLER CORPORATION, DAVENPORT, IOWA



of the NEW

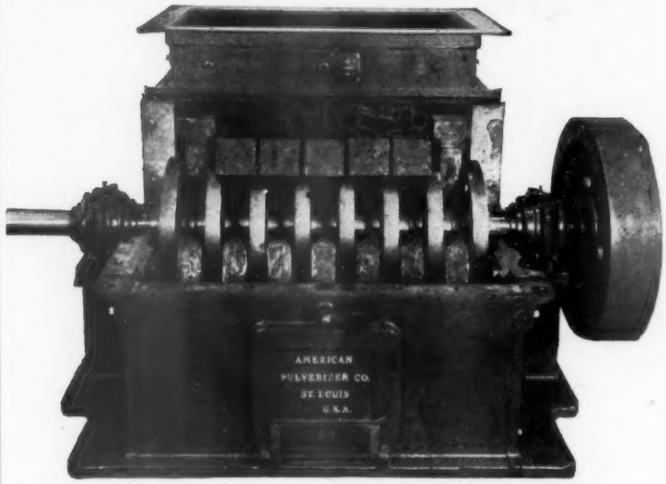
BARBER GREENE
BELT CONVEYOR CATALOG AND MANUAL

MAIL TODAY— 37-17

Barber-Greene Company, Aurora, Illinois—Gentlemen: Send me without cost or obligation your new 116-page Belt Conveyor Catalog and Manual that not only shows the complete line of B-G *Standardized* Belt Conveyors, but has 20 pages devoted entirely to Engineering Data.

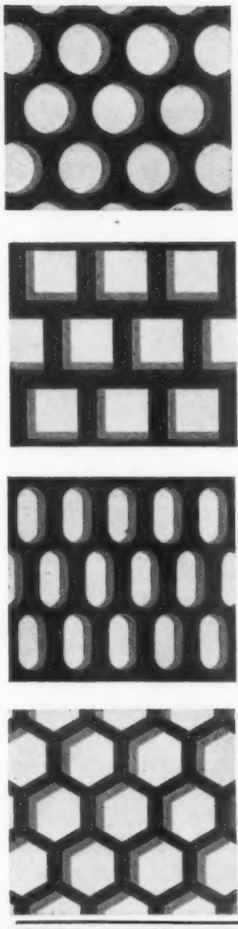
Name.....
Company.....
Address.....
City..... *State*.....

AMERICAN
Hammermills . . . Ring Crushers



Cut your crushing costs the AMERICAN Way. These powerful Hammermills and Ring Crushers, built in sizes from 10 to 100 tons per hour, are extremely economical to operate and produce a uniform, cubical product, free from chips or slivers. Write for complete details today!

AMERICAN PULVERIZER CO.
1289 Macklind Ave. **St. Louis, Mo.**



? No Longer ? A Question !

Any lingering doubt of the superior performance and economy of CROSS VIBRATING SCREEN PLATES has been completely and finally cancelled by experience of the past three years.

During this period, without a single exception, users have reported far longer wear, reduced cost per ton, better sizing, excellent capacity, and complete satisfaction generally.

Accounting for this result are Cross Hexcreen Perforations for sizing accuracy and capacity, Cross improved CM5 Steel for long, uniform wear, Perfected Double Corrugating to retard and distribute load, and improved service generally.

If you have not yet tried CROSS Plates, why not write us now while it is fresh in your mind?

CROSS ENGINEERING COMPANY
CARBONDALE, PENNA.
Sales Agencies in Principal Cities

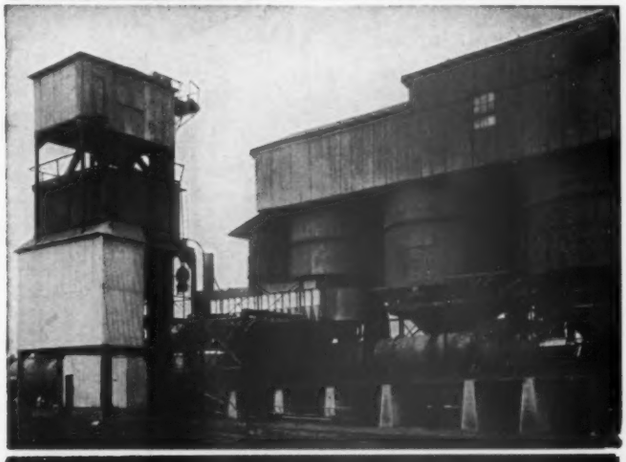
A New Book on Screens

YOU Should Have A Copy

● A new 24-page illustrated catalog complete with engineering information, dimension tables and illustrations of applications handling a wide variety of materials. Ask our nearest office for a copy.

LINK-BELT COMPANY, Philadelphia, Chicago, Indianapolis, Atlanta, Dallas, San Francisco, Toronto, or any of our other offices, located in principal cities. 8142

LINK-BELT Vibrating SCREENS



WARREN ASPHALT PLANTS

HOT MIX —— COLD MIX
—— OR ——
COMBINATION UNIT FOR BOTH TYPES

CAPACITY DESIGN AND ARRANGEMENT TO MEET ANY REQUIREMENTS

Designed and Built
—— By ——
WARREN BROTHERS ROADS CO.
P. O. BOX 1869
Boston Massachusetts

TRADE YOUR OLD TROUBLES FOR *NEW PROFITS!*

Add up your repair bills on that old shovel! Figure your time losses and add the high cost of slow digging. See what your old equipment is costing you.

Your own simple arithmetic will tell you it's time to trade your grief for a new P&H. And we can tell you some facts about new low tonnage costs that will interest you. It's a good time to make a deal.

P&H excavators built in all sizes from ⅜ to 5 cu. yds. capacity — gasoline, Diesel or electric power. Write for literature.

General Offices: 4451 West National Avenue, Milwaukee, Wisconsin

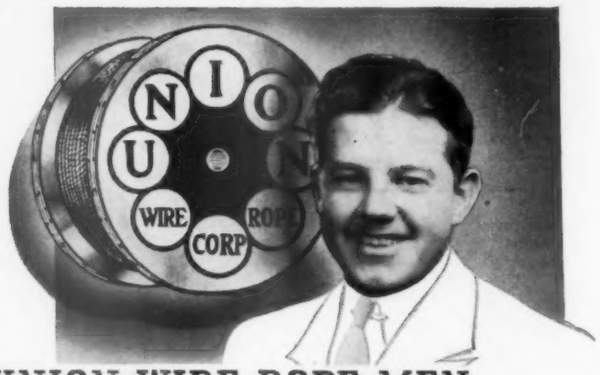
HARNISCHFEGER CORPORATION
EXCAVATORS • ELECTRIC CRANES • ARC WELDERS P&H HOISTS • WELDING ELECTRODES • MOTORS

BARBER-GREENE

New Portability
in a
New Bucket
LOADER

The Model 522 Bucket Loader puts the most economical loading ability on wheels. Let us send you complete literature. Available as shown or with swivel conveyor discharge. Q7

BARBER-GREENE
AURORA, ILLINOIS



UNION WIRE ROPE MEN
Know Their Rope Dope!

Our salesmen—available through our distributors—are *trained* to analyze your rope problem efficiently. Our Engineering Staff is ready to use these analyses for recommendations for "ultimate low cost." Wire, write or consult your Telephone Directory.

UNION WIRE ROPE CORPORATION
2132 Manchester Ave. Kansas City, Mo.

UNION Wire Ropes

A *The* "ULTIMATE LOW COST WIRE ROPE"

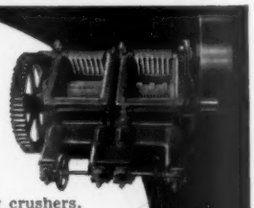
SYMONS
CRUSHERS • SCREENS

FINER PRODUCT
GREATER CAPACITY
LOWER CRUSHING COST
These advantages have made Symons Cones first among reduction crushers.

SIZES CLOSER
SAVES HEADROOM
ACTION IS POSITIVE
The trend is definitely toward level screening. Again Symons leads the way!

NORDBERG MFG. CO., MILWAUKEE WISCONSIN

McLANAHAN EQUIPMENT
for ROCK—
SAND—GRAVEL



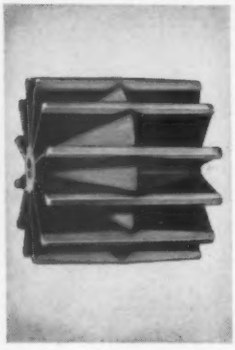
Single and double roll and jaw crushers, hammer mills, super dry pans, steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, hoists. Complete portable, semi-portable and stationary crushing, screening and washing plants for different capacities of any materials.

McLanahan & Stone Corporation
Established 1835
Hollidaysburg, Pennsylvania

AVOID SCREEN TROUBLES THIS SUMMER!

Steady production means a lot in your busy season. Prevent interruptions, inaccuracies, and shutdowns by using **"TWIN CITY" ALLOY SCREENS.** They stand the gaff of long, hard usage.

Order your "T. C." SCREENS now
TWIN CITY IRON & WIRE COMPANY
SAINT PAUL MINNESOTA
Write for Catalog No. 39



DOUBLES
THE LIFE OF CONVEYOR BELTS!

The most profitable investment in conveyor equipment! A pulley that saves at least 50% on conveyor belts! This exclusive Sprout-Waldron development prevents material from coming between the face of the pulley and the belt . . . eliminates the heavy friction wear and punching of holes. Interchangeable with standard pulleys. *Write for list of sizes available.*

SPROUT, WALDRON & CO. INC.
136 SHERMAN ST. MUNCY, PA.
ELEVATORS, CONVEYORS, POWER TRANSMISSION EQUIPMENT

PAY LOADS *and* PROFITS

No ordinary buckets are the Industrial Brownhoist Clamshells. From tip to digging teeth they are as finely built as thirty years experience and modern engineering makes possible. The result . . . out on your work . . . is bigger output, lower upkeep cost and, most important, increased profits.

Your operator will get the most out of his crane when it's equipped with an Industrial Brownhoist Clamshell . . . and you'll get a bigger return on your crane investment. Complete facts are contained in Catalog 353. Want a copy?

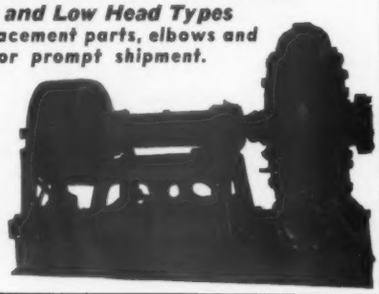
INDUSTRIAL BROWNHOIST GENERAL OFFICES: BAY CITY, MICHIGAN
DISTRICT OFFICES
New York, Philadelphia, Pittsburgh, Cleveland, Chicago.

LIGHTNING

Sand and Gravel Pumps

Heavy-Duty (Ball-Bearing) ***and Low Head Types***

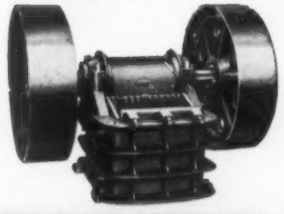
Complete stock of replacement parts, elbows and fittings carried for prompt shipment.



Also clear water pumps for general service, modern design, lowest cost. High efficiency means low operating costs. Replacement parts always fit. We build abrasive material, handling pumps from 10″ down to 3″ in size.

KANSAS CITY HAY PRESS CO.
KANSAS CITY, MO.

WHEN YOU WANT BETTER CRUSHING EQUIPMENT



No matter whether it be a jaw or roll crusher, truck mounted outfit or a great self contained crushing and screening plant, there is a DIAMOND model to meet your needs.

WRITE OR WIRE

DIAMOND IRON WORKS INC.
AND THE MAHR MANUFACTURING CO. DIVISION
MINNEAPOLIS, MINNESOTA, U. S. A.

Lewistown Foundry Products
ARE
Performance-Tested

BUCKET ELEVATORS
REVOLVING SCREENS
CRUSHERS DRY PANS

Lewistown Foundry & Machine Co.
Lewistown, Pa.

SUPER-LOY
WOVEN WIRE SCREENS
LUDLOW-SAYLOR
WIRE CO. ST. LOUIS

ROUND
SQUARE
SQUAROUND*
HEXAGON
PERFORATED
PLATE
of every description
for maximum productiveness from your vibrating screens.
*Reg. U.S. Pat. Off.

HENDRICK MANUFACTURING CO.
39 Dundaff Street, Carbondale, Pa.
Sales Offices in Principal Cities. Please Consult Telephone Directory

12 HUSKY MODELS TO MEET YOUR NEEDS.

CUT PIT COSTS

with economical, efficient equipment

The heavy duty features and many operating advantages built into these sturdy, powerful, fast, convertible shovels, ⅜ to 1¼ yards, will give you increased production at lower cost. Write for Catalog H-3.

BAY CITY SHOVELS, Inc.
Bay City, Mich.

BAY CITY SHOVELS

SHOVELS AND CRANES—PRICED RIGHT!!

1—Lima Type 601 Shovel, Serial No. 370, with 23′ boom, 17′ 4½″ handle, 1½ cu. yd. bucket, powered by Waukesha Motor, Model WK-85A, Bore and Stroke 6¾″ x 8″, Serial No. 345848, complete with Leece-Neville Generator.

1—Lima Type 601, Serial No. 388, with 26′ Boom, 17′ 4½″ handle. 1½ cu. yd. bucket, powered by Waukesha Motor, Model WK-86B, bore and stroke 6¾″ x 8″, Serial No. 346236, Complete with Leece-Neville Generator and Starter.

1—Bucyrus-Erie Type 43B Shovel, Serial No. 11406, with 23′ boom 17′ handle, 1½ cu. yd. bucket, powered by Wisconsin Motor, type E, 6 cylinder, Serial No. 1193, Bore and Stroke 6″ x 7″ complete with Leece-Neville Generator and Starter.

1—P&H Type 760, Serial No. 4479, with 21′ 8″ boom, 19′ 2½″ handle 2 cu. yd. bucket, powered by Climax Motor, Model R61. No. 15211, Complete with starter.

1—P&H Type 700B Shovel, Serial No. 4466, with 26′ boom, 19′ 2½″ handle, 276422 Serial Number, Manganese Bucket Powered by Waukesha Motor, Model WK-71A, Bore and Stroke 6¾″ x 8″, complete with Leece-Neville Generator and Starter.

1—Thew Loraine Type 75A Shovel, Serial No. 3881, equipped with 21′ Shovel Boom, 18′ Dipper stick, 1¼ cu. yd. dipper. Powered by Waukesha Motor, Model S-W24B, Serial No. 158922, Bore and Stroke 5¾″ x 8″. We also have available 40′ Lattice Type Dragline Boom to fit same.

1—Lima Type 601 Shovel, Serial No. 374, with 23′ boom, 17′ 4½″ handle, 1½ cu. yd. bucket, powered by Waukesha Motor, Model WK-85A, Bore and Stroke 6¾″ x 8″, Serial No. 345849, Complete with Leece-Neville Generator and Starter.

1—P&H Model 800 Caterpillar Crane, equipped for Dragline Operation has 65′ Crane Boom and 2¾ yd. Dragline Bucket, Powered with Atlas Imperial Diesel Engine, equipped with extra wide cats.

1—Link Belt Model K2 1½ yd. combination crane and shovel, with manganese dipper stick, 60′ crane boom, 1¼ yd. digging bucket also equipped with back hoe attachment for trench work and cellar excavation.

1—P&H ¾ yd. Shovel, full revolving, equipped with 25′ crane boom, mounted on cats.

1—Byers ½ yd. full revolving crane, 35′ boom, equipped with ¾ yd. digging bucket.

1—Star Power Shovel ¾ yd. capacity, full revolving, mounted on full length crawlers, powered by 4-cylinder Waukesha 60 HP motor.

2—Lima Model 750 Shovels, 22′ boom, 17′ dipper handle, 1¾ yd. capacity, 2½ yd. bucket, all manganese, powered by 6 cylinder 6 x 7 Wisconsin Motor.

1—15 ton Morgan OET Crane, 250 volts, DC current, 3 motor drive 58′ 6″ span, fishbelly type, cab control, main hoist motor 25 HP, type 48-A, bridge motor 25 HP, type 48-A, Main trolley motor 5 HP, size 4-L.

EVERYTHING FOR THE CONTRACTOR

If it is something that a contractor can use we have it at a very great reduction price.

BROOKLYN CONTRACTORS MACHINERY EXCHANGE, INC.

1415 Bergen Street **Phone: PResident 3-7946** **Brooklyn, New York**

SURPLUS EQUIPMENT

CRANES
1—10 Ton Gasoline Type, on Caterpillars.
3—20 Ton Locomotive Type, Standard Gauge.
1—30 to 40 Ton Locomotive Type, St. Ga.

ELECTRICAL EQUIPMENT
3—300 K.W. G.E. Rotary Converters.
1—300 K.W. G.E. Switchgear, Semi-Automatic (new).
3—300 K.W. G.E. Transformers.
15, 25 and 30 h.p. G.E. Type KT motors.

GOLD MACHINE (In Wyoming)
1—Complete Ainley Placer Gold Machine, 4 Bowl, Dragline Operation.

LOCOMOTIVES (Steam)
4—51 Ton Baldwins, 17x24, Standard Gauge.
1—60 Ton American, 20x26, Standard Gauge.
2—77 Ton Baldwins, 19x26, Standard Gauge.
4—80 Ton Porters, 22x26, Standard Gauge.
1—80 Ton Baldwin, 22x26, Standard Gauge.

SHOVELS (Diesel and Electric)
1—½ Yd. Thew Electric Type S, Mining Crawler Type.
1—3½ Yd. P & H Diesel 900, on Caterpillars.

DUMP CARS
175—20 Yd. Koppel and Western, Std. Ga.

PUMPS (Steam)
7—Camerons, 49 to 248 G.P.M.
1—Prescott Duplex, 8x5x10.

HOISTS (Electric Tugger)
65—6½ to 45 h.p. 220/440 volt, 3 phase, 60 cycle.

BOILER (Heating)
1—No. 750, Type C, Kewanee Steam Htg. Boiler.

BUTLER BROTHERS

Producers of Iron Ore

137 East 8th St. **St. Paul, Minn.**

EQUIPMENT FOR SALE CHEAP

1—Vulcan 40 ton Std. Ga. Saddle tank locomotive.
1—Marion 1 yd. Steam crane 40′ boom on cats.
1—Russell Grader, 10′ Blade.
1—Link-Belt K-30, Trench Hoe Att. 45′ Crane Boom.
1—Link-Belt K-44 shovel 50′ boom, fairleads.
1—Lorain 75 B 1¼ yd. chain crowd shovel.
2—Whitcomb 12 Ton 36″ Gauge Locomotives.
2—C. P. Compressors, 590 cu. ft., 100 h.p. motor.
2—Worthington Compressors, 621 cu. ft., 75 h.p. mtr.
1—Allis-Chalmers 75 Caterpillar Tractor with Bulldozer.
2—Chicago Pneumatic Compressors, 750 cu. ft., 50 lbs., 100 H.P. motors.
1—Ingersoll-Rand pavement breaker.
6—Easton 4 yd. all steel 36″ Ga. cars.
4000′ of 9″ x 9″ road forms.
1—Ransome 27 E Paver.
2—No. 116 Chicago Pneumatic Paving Breakers.
2—1 yd. Insley bottom dump concrete buckets.
1—Schramm No. 120 Compressor.
1—1 yd. Owen Bucket.
1—1 yd. Kiesler rehandling bucket.
1—¾ yd. Browning clamshell bucket.
1—¾ yd. Blaw-Knox bucket.
1—Le Courtney 6″ Cent. Pump, 40 h.p. motors.
1—Morris 8″ dredge pump, 150 h.p. G.E. motor.
1—Morris 10″ cent. pump, 2250 GPM at 130′ head.
1—Goulds 12″ cent. pump, 50 h.p. G.E. motor.
1—Thompson 6″ self-priming pump, Waukesha motor.
2—Gardner Denver Sheeting Hammers.
2—Humdinger 6″ self-priming pumps, gas motor.
1—Humdinger 4″ self-priming pump.
1—Humdinger 2″ self-priming pump.
1—Domestic double diaphragm pump, gas motor.
1—G.E. motor, 200 h.p. slipring.
2—No. 9 B 2 McKiernan-Terry Hammers.
3—No. 5 McKiernan-Terry Hammers.
3—No. 7 McKiernan-Terry Hammers.

HARRY C. LEWIS

325 Frelinghuysen Avenue **Newark, N. J.**

MISCELLANEOUS BARGAINS

LORAIN 75-A 1¼ Yd. Shovel, No. 3929.
NORTHWEST MOD. No. 18 ½ Yd. Shovel, No. 4408. Like New.
LIMA Mod. 404 Crane, 15 Ton. Almost New.
Bucyrus-Erie GA-2 Shovel, 1 Yd. $1500.00.
2—Link-Belt K-55 2 Yd. Draglines, 70′ Boom.
LINK-BELT K-44 Backhoe, almost new.
LORAIN Mod. 57 Shovel Attachment. Very Good

SPECIALS

CHICAGO PNEUMATIC Type VC VERT. Two Stage Comp., 664′ Capy., direct connected to BENZ type RHA-40-D.
120 HP DIESEL ENGINE. REAL BARGAIN. LIKE NEW.
INGERSOLL-R. Mod. 425 Portable Comp. Actual Capy. 425 FPM. Used 4 Months. Half Price.
2—Ingersoll-R. Mod. 520 FPM, DIESEL. Skid Mounted.

PLYMOUTH 25 Ton, HLB Std. Ga. Loco., No. 3212. Equip. straight & automatic air brakes, auto. Coup., I.C.C. Safety App.
WHITCOMB 4 Ton Gas Loco. 24″ Ga. Good. $395.00.
WHITCOMB 6 Ton Gas Loco. 24″ Ga. Good. $395.00.
3—PLYMOUTH 10 Ton Ga. Loco. 36″ Ga. Fine Cond.
2—OWEN ¼ Yd. Clamshell with Teeth and Cwt. Like New.
1—HAYWARD 1 Yd. Rehandling Bucket.
28—C. P. No. 5 DRIFTERS with Shells and Steels. $65.00 ea.

CHARLES DREIFUS COMPANY

Widener Bldg. **Rit. 7750** **Phila., Pa.**

GOOD REBUILT GUARANTEED CRUSHING AND PULVERIZING EQUIPMENT FOR SALE at exceptionally attractive prices

Raymond Two-Roll High Side Mill with 7′ tubular collector. Raymond Three-Roll High Side Mill with 7′ tubular collector and connecting ducts, both these units can be seen set up.
Williams "Regular" 12″x13″ Hammer-Mill.
Martin 6″x12″ Jaw Crusher.
Hummer 48″x66″ Double Deck Screen.
Also, Hardinge Ball Mills, Dryers, Conveyors, Gyratory Crushers, Kilns. Send for new issue of "First Facts" and also for details on any unit in which you are interested.
Send us your list of surplus equipment.

FIRST MACHINERY CORP.

821 East 9th Street **New York, N. Y.**

SAVE

Bolted type steel bins will cost you less erected than ordinary wood bins.

New and Used Pipe and Tubing

Jos. Greenspon's Son Pipe Corp.
Natl. Stock Yds. (St. Clair Co.) Ill.

UNUSUAL ITEMS . . . . . UNUSUALLY PRICED!

1—6½-yd. Bucyrus 320-B Electric Shovel.
16—20-yd. Magor air operated Dump Cars.
12—50-ton Covered Hopper Cars.

IRON & STEEL PRODUCTS, INC.
13490 S. Brainard Ave. **Chicago, Ill.**

Advertise
Your "Wants"
and
Surplus
Equipment

ROTARY KILNS AND DRYERS FOR SALE

ROTARY KILNS

2—8′ x 125′
5—6′ x 120′
5—6′ x 60′

ROTARY DRYERS

1—4′6″ x 50′ Direct Heat, double shell type.
1—4′ x 60′ Direct Heat, with ½″ shell.
3—6′ x 60′ Direct Heat.

All of these Kilns and Dryers are complete and still in operating position in the plant of the former Castalia Portland Cement Co. that we purchased in its entirety. Castalia is 60 miles West of Cleveland, and inspection at the plant is invited. Each of the kilns is equipped with firing hood, pulverized fuel bin, with feeder, etc.

BALL MILLS

2—5′x10′ BONNOT BALL MILLS, steel lined, each with 150 H.P. slip ring motor.
1—8′x30″ HARDINGE CONICAL BALL MILL, iron lined, with motor.

TUBE MILLS

5—5′x20′ and 5′x22′ TUBE MILLS, silex lined, steel heads, each with 150 H.P. slip ring motor.
5—5′x27′ TUBE MILLS, silex lined, roller mounted, each with 200 H.P. slip ring motor.

Some of the other good equipment still remaining at the Castalia Portland Cement Plant:

1—12′ dia. Phillips & McLaren Dry Grinding Pan.
300—1½ yd. Dump Cars, two-way, 36″ gauge.
4—18-ton Locomotives, Porter and Vulcan, 36″ gauge.
2—42″ Fuller-Lehigh Pulverizers, gear driven, incl. motors.
1—5-ton Traveling Crane, 70′ span, 300′ runway.
1—20 ton Browning Locomotive Crane.
800 Ft.—12″ and 1200 Ft.—9″ Screw Conveyor, all encased, various lengths.
Electric Motors: Total of 4000 Horsepower, incl. 6—200 H.P. and 7—150 H.P., all 600 RPM, 3/60/440 volts.

JUST ANOTHER MONTH! This equipment at Ely, Minnesota, must be sold quickly:

1—24x36″ All Steel Jaw Crusher.
2—8x36″ Universal fine reduction type Jaw Crushers.
8 Sets of Crushing Rolls.
60 Electric Motors, all 3/60/440 volts.
1—458 CFM. I-R Air Compressor, 100#. Incl. motor.
1—7x6 I-R. Type ER-1 Air Compressor.
1—1¼ yd. Osgood Electric Shovel.
3—Rotary Dryers 4x30′, 4x40′, 5x30′.
3—Tyler Hummer Screens, 4x5′ and 3x5′.
4—3x6′ Sturtevant Moto-Vibro Screens, 2-deck.
1—4′x7′ Leahy Vib. Screen, double deck.
1—150 Amp. Lincoln Electric Welder, port.
1—#5 I-R. Drill Sharpener.
7 Bucket Elevators, various sizes, encl.

CONSOLIDATED PRODUCTS COMPANY, INC.
17-19 PARK ROW NEW YORK, N. Y.
OUR SHOPS AT NEWARK, N. J., COVER EIGHT ACRES

LIQUIDATION

2—Vulcan 8′ x 150′, 2 tire Kilns.
2—Allis Chalmers 5′ x 50′ Dryers.
2—Kilns, 8′ x 50′, 5′ x 33′.
1—Raymond 3 Roll High Side Roller Mill.
1—Jeffrey 24″ x 20″ Type "B" Hammer Mill.
1—Jeffrey 30″ x 24″ Type "A" Hammer Mill.
1—Patterson 6′ x 8′ Continuous Feed Ball Mill, with air separator.

Your Inquiries Solicited

BRILL EQUIPMENT CORP.
183 Varick St.
N. Y. C.

CRANES, SHOVELS AND DRAGLINES

1—55-B Bucyrus-Erie Dragline. Diesel. 80 ft. boom.
1—Model 950 P & H Dragline. Diesel. 90 ft. boom.
1—Bucyrus-Erie 43-B Special Combination Shovel and Crane. 55 ft. Crane Boom and 2 yard Shovel Front. Diesel.
1—43-B Bucyrus-Erie Dragline. 60 ft. boom. Gasoline.
1—Northwest No. 5 Combination Crane and Shovel. 50 ft. Crane Boom. Gasoline.
1—Lorain 75-B Combination Crane and Backhoe. 50 ft. Crane Boom. Gasoline.
1—Koehring Model 501 Combination Shovel and Crane with 50 ft. Crane Boom and 1¼ yard Shovel Front. Gasoline.
1—Industrial Brownhoist. Model DC Crane. 60 ft. boom. 15-tons capacity. Gasoline.
1—Brownhoist No. 2 Crane. 40 ft. boom. Gasoline.
1—Little General Shovel, complete with ½ yard shovel front. Gasoline.

ALL THE ABOVE AVAILABLE FOR IMMEDIATE SHIPMENT.

ATLANTIC EQUIPMENT CORP.
50TH AND GRAYS AVE.
PHILADELPHIA, PA.
Tel. Evergreen 6363

PRICED FOR QUICK SALE

1—48″ Symons Horizontal Disc Crusher (Nordberg Mfg. Co.), completely overhauled, rated capacity 1″ product, 45-60 T.P.H. $1,000.00
1—8″ Allis-Chalmers Style N Gyratory Crusher, No. 7715, like new; used only one season. Manganese fitted, non-choking concaves, smooth head for fine crushing, extra head for coarse crushing $850.00
1—No. 2 Allis-Chalmers Gyratory Crusher, manganese fitted $250.00
1—Allis-Chalmers Eccentric with manganese steel gear for No. 5 style K crusher, like new.. $150.00
1—30″x16″ Wis. Foundry Crushing Rolls... $450.00
1—24″x14″ Wis. Foundry Crushing Rolls... $275.00
Several Vibrating Screens, Bucket Elevators, Sand Classifiers, Electric and Gasoline Motors, 2″, 3″, 4″, 6″ Self-priming centrifugal pumps with gasoline motors; 1½″, 2″, 3″, 4″, 6″ centrifugal pumps with electric motors.
1—Portable Air Compressor, on pneumatic tired wheels, 160 c.f.m. actual air.
1—Portable Air Compressor, on pneumatic tired wheels, 105 c.f.m. actual air.
Above compressors are like new, have been used only a few months.
1—Link-Belt Shovel Boom Assembly with 1 yard Amsco dipper, excellent condition, will fit models K1, K2, K35, K42.
1—Northwest ¾ yard Shovel Boom Assembly for Model 104-105.
1—P&H ¾ yard Shovel Boom Assembly for Model 206.

LIPPMANN ENGINEERING WORKS
4603 W. Mitchell Street Milwaukee, Wis.

Rebuilt Equipment

BROWNING Model 8-DT, 20 Ton 8-Wheel Locomotive Crane.
2—PLYMOUTH 30-ton 6-wheel Std. Ga. Diesel Locomotives.
4 PLYMOUTH 4 ton 24″ Ga. Gas Locomotives.
BROWNHOIST 15 ton Locomotive Crane; 50′ Boom.
VULCAN 8 ton Std. Ga. gas locomotive.
BALDWIN 58 ton 6 wheel switcher, 19x24″ cyl. Walscheart valve gear.
DAVENPORT 22 ton 4-wheel Saddle Tank; Cyl. 11x16.
BARBER-GREENE Model 42-B Loader; Gas Engine; Disc Type Feeder.
P&H Model 330, ¾ Yd. Dragline.
PLYMOUTH 12 Ton 36″ Ga. Gasoline Locomotive; Hand Brakes.
WILLIAMS 1 Yd. Clamshell Bucket.
14—2 Yd. Koppel 36″ Ga. V-Shaped Dump Cars.

Write for Complete List

SOUTHERN IRON & EQUIPMENT COMPANY
Plant & General Offices
Atlanta, Georgia

CONVEYORS: 12 to 36″ Belt—Idlers—Pulleys.
Stat'y. 12″x50′, 12″x80′, 24″x100 and 200′.
Portables 14″x40′, 16″x20′, and 18″x30′.
36″ L-B. Self-Contained Apron Feeder.
24″ B-G. Electric Plate Feeder.
SCREENS: 4x8′ 2-deck Gyrex Vibrating.
4x8′ 2-deck Heavy Duty Perfex Vibrating.
6—4x8′ 1-deck Hummer Vibr., 2-unit V16.
4x5′ 1-deck Hummer Vibrating, V-16 and V-40.
120 New 3x5 and 4x5 "Ton-Cap" Screen Cl th.
12-KVA Motor Generator for Hummer Screen.
3x8′ 1-deck Link-Belt Vibrating, Belted
3x5′ 1-deck Deister Multirap Vib., Belted.
42″x20′ Revolving—30″ Telsmith Grizzly.
BUCKET ELEVATORS: 14″x50′, 20″x50′, and 24″x40′ Continuous Inclined.
10″x40′ On Chain. 6″x50′ On Belt Encased.
Casings, Buckets, Drives, Chains, Belts.
CRUSHERS: 9x15, 9x16, 10x20, 10x4, 12x18 and 24x36-B Jaw. 15″x8″ Jeffrey Pulverizer.
28x30 Robins Heavy Duty Crushing Rolls.
2—12x10 New Holland Double Cinder Roll.
12″ Traylor Gyratory.
COMPRESSORS: 45′ and 260′ Belted Types.
12x12x12 I-R Steam-Air.—Portable Units.
TRACK & CARS: 16—24″-g. 1-yd. V-Cars.
7—24″-g. Atlas ½-yd. End Dump Cars.
2—30″-g. Mercury Battery Locomotives.
36″-g. V-shape End Dump Car, 2-yd. Cap.
MISCELLANEOUS: ½-yd. Speeder Gas Shovel.
50 and 60-hp. Waukesha Gasoline Engines.
2-drum Stroudsburg Builders Gas Hoist.
Cletrac No. 40 Caterpillar Tractor, Gas.
Clamshell Buckets—¾, 1, 1½, and 2½ yards.
Dragline Buckets—½, 1, 1½ yards cap.

G. A. UNVERZAGT
15 PARK ROW NEW YORK CITY

Northwest Crane Bargain

We offer subject to prior sale one Northwest Model 104—1¼ yd. crane, high gantry, steel cab, latest style crawlers, guaranteed excellent mechanical operating condition, ready for work, 45-60′ boom (whichever is desired) $5800.00
F.O.B. cars Milwaukee, Wis.
Complete specifications and pictures on request.

HUNTER TRACTOR & MACHINERY CO.
325 So. 16th St. Milwaukee, Wisconsin

LOCOMOTIVES

CARS, BUCKETS, CRUSHERS, CONVEYORS, HOISTING EQUIPMENT, MOTORS, GENERATORS, HYDRAULIC WHEEL PRESSES.

Buy, Sell, or Exchange

Industrial Equipment Corp.
P. O. Box 1647 Pittsburgh, Pa.
Warehouse Carnegie, Pa.

Jaw, Roll and Cone Crushers, various sizes.
8A, 8B, 10B, 32B & 40B Telsmith. 19, 25S Kennedy.
No. 3, 4, 6 TZ Traylor Gyratory Crushers.
6, 8, 10 & 12″ Sand & Gravel Pumps, other centrifugals.
Conveyor Equipment 14″-36″, belt and Portable.
Barber-Greene Loaders, Models 42, 42A, 57.
Vibrating and Rotary Screens, all types and sizes.
4—Euclid 6-7 yard Crawler Dump Wagons.
Gasoline Locos—all weights and gauges. Dump Cars.
1½ yd. Page—"C" Dragline Bucket.
90 HP Fairbanks, 110 HP Anderson Diesels.
2—360 HP Fairbanks 3/60/2300V Diesel Generator Sets.
Ask for Bulletin No. 51

MID-CONTINENT EQUIPMENT CO.
710 Eastgate Pa. 2290 St. Louis, Mo.

FOR SALE

A Good Time to Buy

Tanks and Pumps complete unit (2) 10,000 gals.
Trucks (10) Autocar 11 ton new 1939.
Shovels (2) Northwest 80D diesel cat new '39.
Stone polisher-rubbing bed-coping machine.
Loco. Porter 50 ton S/T with sep. tender.
Crushers gyr. 21K—8K—7½K—6K—4K.
Crushers jaw 66x86 — 60x84 — storage bins.
Rotary kilns (2) 8x125—8x150—with coolers.

A. V. KONSBERG
111 W. Jackson Blvd. Chicago, Ill.

ELECTRICAL MACHINERY

Motors and Generators, A.C. and D.C. for sale at attractive prices. New and Rebuilt. All fully guaranteed. Write for List and Prices.

V. M. NUSSBAUM & CO.
FORT WAYNE, IND.

Royal E. Burnham

Attorney at Law

•

Patent and Trade-Mark Causes

•

511 Eleventh Street, N. W.
WASHINGTON, D. C.

RELAYING RAILS

All sections new and relaying rail, spikes, bolts, frogs, switches, "V" Shaped, flat and Contractors' Cars, etc. Prices cheerfully quoted.

M. K. FRANK
480 Lexington Ave., NEW YORK CITY
25 St. Nicholas Bldg., PITTSBURGH, PENNA.

REAL BARGAINS

1—Allis-Chalmers 12" jaw crusher.
4—Northwest draglines from 1 to 1¾ yd. capacity. Diesel and Gas.
1—P & H comb., crane & dragline cap., 1 yd. with 40 ft. boom.
1—Erie "B" steam with 42 ft. boom & oversize boiler. Pile driver.
Also complete line construction equipment.

RENNOLDS EQUIPMENT CO.
13908 S. Halsted St. Chicago, Ill.
Telephone: Riverdale 139

RAILS "1 Ton or 1000"

NEW RAILS—5000 tons—All Sections—All Sizes.
RELAYING RAILS—25,000 tons—All Sections—All Sizes, practically as good as New.
ACCESSORIES—Every Track Accessory carried in stock—Angle and Splice Bars, Bolts, Nuts, Frogs, Switches, Tie Plates.
Buy from One Source—Save Time and Money.
'Phone, Write or Wire.

L. B. FOSTER COMPANY, Inc.
PITTSBURGH NEW YORK CHICAGO

O. C. HOFFMAN, Pres. L. H. HOFFMAN, Treas.

DIAMOND CORE DRILLING

HOFFMAN BROS. DRILLING COMPANY
PUNXSUTAWNEY, PA.

We drill for any mineral. We have more than forty steam, electric and gasoline drills, adapted for any job. Satisfactory cores guaranteed. Our prices are right.
Established 1902 - - - - - Telephone No. 382

DEPENDABLE MACHINES for rent or sale

P&H ¾ yd. combination shovel and crane.
Universal truck crane; Mack truck.
International TD-18 tractor, used 600 hours.
Caterpillar tractors,—15, 20 and 30.
Several power units 30 to 80 H.P.
Large selection of clam and drag buckets.

TRACTOR & EQUIPMENT CO.
433 S. Jefferson St., Chicago
Branch: Box 392, Springfield, Ill.

FOR SALE

3-W Bucyrus Monighan Drag Line, 70 to 90 ft. boom. Will handle 4 yard bucket. Completely rebuilt, electrically operated, and ready to go. Priced to sell. For full specifications and price, address

BRODERICK & GORDON
3901 Medford St., Los Angeles, Calif.
5230 Washington St., Denver, Colorado

WE LOOK INTO THE EARTH

By using Diamond Core Drills We drill for Limestone, Gypsum, Talc, Fire Clay, Coal, and all other minerals.

PENNSYLVANIA DRILLING CO.
Drilling Contractors
Pittsburgh, Pa.

USED PARTS FOR SALE

5K GATES (ALLIS-CHALMERS) CRUSHER. All used parts except spider including Hercules steel shaft with two piece mantle.

J. W. BURRESS
1701 Shenandoah Ave., N.W. Roanoke, Va.

FOR SALE

Large deposit of High Calcium Limestone near Great Northern Railway and Coulee Dam Lake.
Also large deposit of Dolomite.

ROBERT ORNDUFF
Northport, Washington

WANTED TO BUY

All or part interest in small operating sand and gravel plant or stone quarry.

Send replies to
BOX 704
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

DIESEL ENGINE GENERATOR PLANT

3—Duplicate 219 KVA G.E. Alternators 2400/480/240 v. 3 ph. 60 cy. 200 RPM each direct connected to 300 HP Buckeye Diesel Oil Engines. Complete. 10 years old. Perfect condition.

MOORHEAD-REITMEYER CO., INC.
30th & Brereton Sts. Pittsburgh, Pa.
May. 7900

Buy Guaranteed Rebuilt

POWER EQUIPMENT

Save 50% the cost of new . . . Get equipment guaranteed "same as new." Select wisely from Chicago's largest, most complete stock. Write for complete information.

Chicago Electric Co. 1334 W. Cermak, CHICAGO

WANTED

1—Magnetic clutch 125 volts, minimum 54" diameter for working with 400 HP synchronous motor. Send complete specifications, true condition, make, location, and price first letter to

BOX 708
PIT AND QUARRY PUBLICATIONS
538 S. Clark St. Chicago, Ill.

100000 ITEMS

- Motors
- Generators
- Transformers
- M G Sets

Wire—Write—Phone

ERIE ELECTRIC MOTOR REPAIR CO., INC.
124 Church St. Buffalo, N. Y.

SHOVELS—CRANES

1—Lorain-77 Diesel Shovel No. 5287, double drums, 1½-yd., overhauled.
1—Marion-21 Electric Crawler Shovel ¾-yd.
1—Lorain-40 Truck-Shovel attachment ¾-yd.
1—Northwest No. 4 Backhoe 47" bucket, overhauled.
1—Byers "Bulldog" Backhoe 25" and 37" buckets.
1—Universal Truck - Crane No. 1146, 4 - sp. Mack, pneumatic tires, bargain.
1—Lorain-40 — 8½ - ton Truck - Crane 4 - sp. Mack.
1—15-ton cap. Northwest No. 4 Gas Crawler Crane, No. 3793, 40-60' boom, overhauled, in excellent condition.
1—Lorain 75-B Gas Crawler Crane 45' boom.
1—New style Northwest Dragline Fairlead.
2—Linn Tractors—one 7-yd. all steel body—one std. 6½-yd. rebuilt with new crawlers, rollers, etc.

GREY STEEL PRODUCTS CO., INC.
74 Central Ave. Glen Rock, N. J.
Tel. Ridgewood 6-2275

Advertise Your

"Wants" and

Surplus Equipment

"WE BUY, REBUILD, SELL OR RENT"

AIR COMPRESSORS
Portable and stationary, belt with elec. or gas power, sizes from 20 cu. ft. to 1,000 cu. ft.

BINS
9—2 compartment bins; 2—118 ton Blaw Knox; 1—75 ton Butler V-40; 3—72 ton Blaw Knox; 1—60 ton Butler V-40; 1—35 ton Blaw Knox portable; 1—26 ton Heltzel portable with Kron dial scale. All above with or without volume or weigh batchers.

BUCKETS
26—Clamshell, all sizes and types; Williams, Blaw Knox, and Owen.
6—Dragline: 1—1¾ yd. Northwest; 1—1½-yd. Omaha; 1—1¼ yd. Page; 2—1 yd. Hayward; 1—¾ yd. Page.
1—1½ yd. Pioneer Cableway Excavator bucket.
7—Dragscraper: 2—1 yd. Sauerman; 1—1 yd. Green; 1—¾ yd. Garst; 2—½ yd. Garst.

CONVEYORS & ELEVATORS
4—Steel frame b lt conveyors: 3—18" Barber-Greene 60', 45' & 24'; 1—National 18"x30'.
11—Bucket elevators: Rex and Weller, on chain or belt; all sizes.

CRANES, DRAGLINES & SHOVELS
1—Link Belt Mod. K-55 combination dragline and shovel Ser. No. 1698, gasoline power, 70 dragline boom, 2 yd. shovel frame.
1—Page, Model No. 411 Diesel crawler dragline, 70' boom, 2 yd. bucket.
1—P & H Model No. 650, Serial No. 4188, 65' boom; 1¼ yd. bucket.
1—Link-Belt K-42, combination shovel crane and trench hoe. Serial No. 1265, 1¼ yd. shovel front, 60' crane boom.
3—Northwest, Model No. 105, Serial Nos. 2053, 1645 and 1522, 40' boom, 1 yd. bucket.
1—Link-Belt, K-1, Serial No. 1024, 50' boom, 1 yd. bucket.
2—Osgood Heavy Duty, Serial No. 2069 and No. 2087, combination 1 yd. shovel and crane, 40' boom.
1—Thew, Model "O" combination shovel crane and dragline, Serial No. 2801 and No. 2687, ¾ yd. shovel fronts, 40' crane boom.
1—P & H Model No. 206, 40' boom, ¾ yd. bucket.
1—Byers Bearcat, Serial No. 3299, 30' boom, ½ yd. bucket.

CRUSHERS
5—Gyratory crushers: 1—#5 Allis-Chalmers; 1—#5 Austin; 1—#5 Gates; 1—#3 McCully; 1—#0 McCully.
10—Jaw Crushers: 3—15x36" Universal; 1—15x36" Cedar Rapids; 1—15x26 Champion; 1—12x20" Acme; 2—10x20" Climax #21½; 1—9x16" Telsmith No. 9A; 1—9x15" Champion.
1—Set of Allis-Chalmers, smooth type crushing rolls, 42x16".

DREDGE PUMPS
1—12" Morris Heavy Duty D. C. to 100 H.P. dbl. cyl. steam engine.
3—Belt Driven: 3—Morris Mang., 1—10", 1—8", 1—6".

HOISTS
1—2 yd. Thomas 2 speed Class L Cab'e-way excavator hoist with 150 HP electric motor.
1—1 yd. Cedar Rapids 2 speed drag-scraper hoist with 50 HP electric or gas power.

PNEUMATIC TOOLS
4—Ingersoll-Rand & Gardner Denver Wagon Drills with I-Rx72 or Gardner Denver Mod. 21 Drills and air hoists.
53—Jackhammer drills: I.R. DCR-23 & S-49 and Gardner Denver, Mod. 37 & 11-D.
17—Drifters, column mounted: 7, Sullivan TJ-10; 4—Gardner Denver Mod. 17; 6—I.R. 72.
3—Drill sharpeners: 2—Sullivan late Mod. Class C and Class A; 1—I.R. 50.

TRACTORS AND SCRAPERS
14—2—Caterpillar D-8. Dies ls with 13 yd. LeTourneau scrapers: 1—Allis-Chalmers mod. L. 12 ton crawler tractors with or without Baker bulldozer; 3—Allis-Chalmers mod. 75, 12 ton crawler tractors; 3—Caterpillar tractors: 1—mod. 65; 1—mod. 60, 10 ton; 2—mod. 30; 5 ton, 1 with derrick attachm nt; 1 — Allis-Chalmers, model K, 5 ton tractor with Baker hydraulic bulldozer; 2—Linn; 2—Fordson, one with winch and one with derrick attachment.

WHIRLEY
1—Mod. 75 Wiley Whirley No. 2973, 20 tons cap., 75' boom, 3 D Clyde 80 HP elec. hoist and 30 HP elec. swinger, all complete. Perfect condition.

PLEASE SEND FOR COMPLETE STOCK LIST

EQUIPMENT CORPORATION OF AMERICA

PHILADELPHIA—1505 Race St. Phone: Rittenhouse 4664

CHICAGO—1160 So. Washtenaw Ave. Phone Nevada 2400

PITTSBURGH—P. O. Box 933. Phone Federal 2000

LOCOMOTIVES SHOVELS—CRANES
ATTRACTIVE PRICES

1—80 Ton American O-6-O Switcher
1—75 Ton Baldwin O-6-O Switcher
2—40 Ton American Saddle Tanks
1—38 Ton Vulcan Saddle Tank
1—38 Ton Porter Saddle Tank
2—25 Ton Plymouth Gasoline
STANDARD GAUGE—RECONDITIONED

1—Marion 480 Combination Steam Shovel & Crane
1—52-B Bucyrus Dragline Atlas Imperial Diesel Engine—70 ft. Boom
1—25 Ton Browning 8-C Steam Locomotive Crane

Birmingham Rail & Locomotive Co.
BIRMINGHAM, ALA.

CRUSHERS

GYRATORY: 42" McCully with 80% brand new parts. 36" Allis-C. 20" Super. McCully conv. to 16"; Gates Nos. 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6, 8C, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.

JAW TYPE: Traylor 60x84, 48x60, 42x48, 24x72. Superior 84x66 & 24x36. Buchanan 30x42. Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x36, 9x30, 15x36.

REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 3-F & 40. Traylor 36" Tz, 8", 10", 12". Super. McCully 6" & 10". Newhouse 5, 7 & 10". Symons Cone & Disc. Ty. 2' to 4'.

ROLLS: Allis-C. 12½x12, 36x16, 40x15, 54x24 & 72x30. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16. Etc., Etc.

HAMMERMILLS: Williams Nos. 1, 2, 3, 4, 8 & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40, Etc.

MILLS: Kennedy Ball 4x6, 5x6 & 5x8. March 8x6 & 10x9. Hardinge 6'x3', 8'x30" & 6'x9'. Misc. Tube Mills 5' & 6'x22'. Sturtevant Ring Roll. Raymonds, Kents, Fuller-Lehigh, Etc., Etc.

CRUSHING PLANTS: No. 65 Diamond, No. 22 Pioneer 8x24, 1030 Good Roads, 9x40 Austin-Western, 9x36 C.R.

MISCELLANEOUS ITEMS

Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryers, Derricks, Draglines, Drag Scrapers, Dredges, Drills, Engines, Elevators, Excavators, Generators, Hoists, Kilns, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Slacklines, Shovels, Tanks, Trucks, Tractors. Etc., in many sizes, types and makes at low prices.

(I have equipment at many points in the United States and Canada. What you need may be near your plant.)

ALEX T. McLEOD
7229 Rogers Avenue CHICAGO

LIQUIDATION SPECIALS

4—330 cu. ft. Metalweld—Worthington air compressors, gas, portable.
1—320 cu. ft. Sullivan air compressor, Type WK 314, gas, portable.
1—220 cu. ft. Sullivan air compressor, Type WK 314, gas, portable.
3—110 cu. ft. Sullivan air compressors, Type WK 312, gas, portable.
2—110 cu. ft. Metalweld—Worthington compressors, gas, mounted on 1½ ton Ford Model A dual pneumatic trucks.
2—110 cu. ft. Sullivan air compressors, Type WK 312, gas, mounted on 1½ ton G.M.C. dual pneumatic trucks.
1—90 cu. ft. Ingersoll-Rand air compressors, gas, mounted on 1½ ton Model A dual pneumatic trucks.
Concrete batching plant, 5 compts., 1000 yds. aggregates, 750 yds. cement, automatic weigh batcher.
Robinson bulk cement unloader, air.
225 bbl. Erie bulk cement plant, complete.
155 bbl. Fuller cement bin, electric batcher.
Blaw-Knox 270 bbls. bulk cement plant, complete.
72 ton Blaw-Knox steel bin, portable, 2 compts.
50 ton Blaw-Knox steel bin, portable, 2 compts.
42 cu. yds. Beaumont steel bin, 2 compts.
Fuller-Kinyon bulk cement unloader, portable.
Fuller C40 rotary air compressor, electric.
Gyratory crushers: K.V.S. 30, 37-S, 40; Telsmith 32, 8A, 8B; Traylor 8"; McCully 13", 8", 6".
Jaw: 6x12, 9x16, 10x20, 12x26, 13x30, 18x36, 24x36.
Jeffrey Type A 30"x24" pulverizer.
Apron feeders, 18"x6', 24"x6', 48"x14' 5'x15'.
Bucket elevator, 65' chain, buckets 24"x12"x17⅝".
Robins 4x8 double deck Gyrex vib. screen.
Telsmith 4'x10' single deck vibrating screen.
Whirley, 25 tons cap., 85' boom, electric.
41-B Bucyrus-Erie comb. crane and shovel. Steam.
50-B Bucyrus-Erie steam shovel.
Blaw-Knox single line clamshell bucket, ¾ yd.
Hayward 1 yd. clamshell bucket, rehandling.
8—Barber-Greene conveyors, 24"x35', type N.
4—I.R. wagon drills, FM-2, pneumatic tires.
I.R. quarry bar, complete with I.R. X-71 drill.
Clyde 3 drum electric hoist and swinger, 75 HP.

RICHARD P. WALSH
30 Church St. New York

COMPLETE PLANT LIQUIDATION!

4 ft. Symons Cone Crusher. Late model.
Nos. 10, 9 & 6 Gates Primary Gyratories.
5x10 & 4x8 Niagara double deck Screens.
Conveyors—35 to 150 ft. Belt & Bucket.
25 ton Browning Locomotive Crane; Marion model 91 Steam Shovels; Universal Truck Crane.
2 Loomis Electric Well drills; Quarry Cars; Dump Trucks; Jackhammers; Complete machine shop.
Buffalo 25 ton truck scale; Fairbanks track scale.
2 Ing. Rand 12x10 type ER1 Air Compressors.
50 Electric Motors 3 HP to 150 HP, all types.
25 ton Plymouth Gasoline Locomotive.
1 yd. & 1¼ yd. P & H Gas Cranes & Draglines.
180 HP Fairbanks Morse Dredge type Diesel.
120 HP Atlas 6 cyl. Diesel Power Unit, clutch.
240 HP Fairbanks Morse 200 KVA Diesel Gen. Set.

MISSISSIPPI VALLEY EQUIPMENT CO.
501 Locust St. St. Louis, Mo.

FOR SALE

11x36 Gruendler Jaw Crusher — Manganese Fitted—Roller Bearings.
200 HP Fairbanks-Morse Diesel Engine with 3/60/2300 Volt Generator.
75' Centers Allis-Chalmers Elevator Conveyor —30" Belt.
150 HP Sterling Gasoline Engine.
300 HP Slip Ring Motor 3/60/440-600 RPM.
200 Ton—Hydraulic Wheel Press.
200 HP Sq. Cage Motor 3/60/440-1800 RPM.
25 Ton Browning Loco. Crane—8 Wheels.
No. 5—Gates Gyratory Crusher.

ARTHUR S. PARTRIDGE
415 Pine St. St. Louis, Mo.

Conveyors—24"x40'-60'-80'. 24"x60' Gas port.
Screens—Gyrex 3 deck 4x10. Misc. 5x10 to 3x8.
Hains Loader—$250. Universal cat. Crane, barg. Boom, sticks, dipper, etc., for P&H ¾ yd.
Coal Conveyor—Barber-Greene 30' gas crawler type.
00 Raymond Mill. Gas locos., 12 ton, 36" gauge.
Loco. Cranes—Browning 15 & 35 ton, Ohio 25 ton.
Drag Scraper & Slackline Excavator equipment.
Buckets—⅜ yd. Page; ⅝ yd. Kiesler, $150.
Your Offers of good used equipment solicited.
JAMES WOOD, 53 West Jackson Blvd., Chicago, Ill.

BARGAIN LIST
Used Diesel Engines and Generator Sets

All engines are in good operating condition. Switch equipment for each generator includes a field discharge switch, field discharge resister, field rheostat, exciter rheostat, throw switch, voltmeter, Cutler Hammer line starter and control, and two transformers.

2 "Caterpillar" D-13000 Engines with Fairbanks Morse Generators, 100 KVA-AC; 125 KVA-AC.
2 "Caterpillar" D-13000 Engines with Allis-Chalmers Generators, 156 KVA-AC; 125 KW-AC.
4 "Caterpillar" D-13000 Engines with Westinghouse Generators, 55 KW-DC; 100 KVA-AC; 125 KW-AC; and 150 KVA-AC.
2 "Caterpillar" D-13000 Engines with General Electric Generators; 75 KW-AC; and 150 KVA-AC.
2 "Caterpillar" D-13000 Engines with Crocker and Wheeler Generators; 125 KVA-AC (both)
2 "Caterpillar" D-17000 Engines equipped with "Caterpillar" clutch and "V" belt pulley—no generators.
9 good rebuilt radiators for "Caterpillar" D-13000 Engines. 2 good rebuilt radiators for "Caterpillar" D-17000 Engines.

***For further details and prices, write:* Dept. A.**
R. G. LeTOURNEAU INC. Peoria, Illinois

TRUCK MIXER FLEET

6—1½-2 yd. Jaeger Truck Mixers on EH Mack trucks—good as new, only used two years—mixers latest type Jaegers—late type Macks.

2—1½-2 yd. Jaeger Truck Mixers on De-Luxe model Fords—very good condition—ready to go—excellent buy.

2—1½-2 yd. Jaeger separate engine drive truck mixers mounted on GMC trucks.

3—4 yd. Rex Moto-Mixers on 1938 Autocar Trucks. Mixers new 1938—now working.

4—4 yd. Rex Moto-Mixers on AC Mack Trucks. Mixers new 1937—now working.

1—2½-3 yd. Rex separate engine drive mixer, 1931, mounted on GMC dual pneumatic tired truck.

1—3-3½ yd. Rex separate engine drive mixer, 1930, mounted on AC Mack.

READY TO GO

1—2-2½ yd. Blaw Knox Truck Mixer—separate engine drive—used one year—without truck.

11—4-yard Transit Mix bodies—excellent condition. Each.....$500.00

1—80 ton 2 compartment Bin.

Pumps—from 2" to 10" Jaeger's—Self-Priming Centrifugal.

Mixers—7S-10S-14S Low Charge and Power Loaders—late models.

Trenching Machine—Compressors—Vibrators.

Spencer Dust Collectors — Hoists — Engines—Parts.

½ yard Speeder Crane—¾ yard Northwest Crane.

Orange Peel Bucket.

THE JAEGER-LEMBO MACHINE CORP.

127-04 Northern Blvd. Phone: NEwtown 9-7777 CORONA, L. I., N. Y.

FOR SALE

Two 8'0" x 13'7" Allis-Chalmers Scrubbers for clay disintegration. These scrubbers are complete except for drive, and are in excellent condition, having been used only a few months. Full details upon request.

Box No. 712

PIT AND QUARRY PUBLICATIONS

538 S. Clark St. Chicago, Ill.

WAUKESHA and HERCULES ENGINES FOR SALE

Several new and slightly used Engines, bought for models we have discontinued—75 H.P. and 125 H.P. Engines of both nationally known makes.

Real Savings for Quick Inventory Reduction

THE JAEGER MACHINE CO.
Columbus, Ohio

FOR SALE

8 Miles of 25 lb. Used 24 Gauge Steel Track with Steel Ties, 15 ft. Lengths.
Four 8 Ton Plymouth Gas Locomotives.
100 Batch Cars.

Jos. Greenspon's Son Pipe Corp.
National Stock Yards (St. Clair Co.), Ill.

HYDRATE PLANT EQUIPMENT

1—Clyde 4-6 ton Continuous
1—Kuntz 6 ton Continuous
1—Schultless 1 ton Continuous
1—Schultless 2 ton Continuous
All With Kuntz Dust Control
1—6-8 ton Kuntz hydrate system for double Separation. This plant was recently replaced by a 10-12 ton per hour Kuntz system for triple separation.

BOX 574, York, Pa.

"The ad ran once—we sold the machinery. Please cancel future insertions."

Quoted from a letter written by a quarry operator who advertised equipment for sale in this Broadcast Section of Pit and Quarry.

If you have something you want to sell, advertise it. If you want to sell it quickly, advertise it in Pit and Quarry.

Write for a rate card to-day, or, better still, send an advertisement and learn for yourself how well and quickly this section can serve you.

BARGAIN PRICES

ON

RUBBER BELTING

TRANSMISSION—CONVEYOR—ELEVATOR

"V" BELTS

FOR

PUMPS—CRUSHERS—PULVERIZERS—ETC.

RUBBER HOSE

FOR

AIR—WATER—STEAM—ETC.

Partial Stock List

NEW AND HEAVY DUTY

Conveyor and Elevator Belting

Quantity	Width	Ply	Top Cover	Bottom Cover	Type
668 Ft.	36"	6	1/8"	1/16"	Conveyor
660 "	30"	6	1/8"	1/16"	"
245 "	26"	5	1/8"	1/16"	"
906 "	24"	5	1/8"	1/32"	"
298 "	24"	4	1/8"	1/16"	"
370 "	22"	8	1/16"	1/16"	Elevator
296 "	22"	8	Friction		"
1455 "	20"	5	1/8"	1/32"	Conveyor
403 "	20"	4	1/8"	1/16"	"
1738 "	18"	4	1/8"	1/32"	"
60 "	18"	8	1/4"	1/16"	Elevator
288 "	18"	6	1/8"	1/16"	"
712 "	18"	4	1/16"	1/16"	Conveyor
1096 "	16"	4	1/8"	1/32"	"
554 "	16"	4	1/16"	1/32"	"
738 "	14"	4	3/32"	1/32"	"
288 "	14"	4	1/8"	1/16"	"
110 "	12"	8	1/8"	1/16"	Elevator
226 "	10"	6	1/16"	1/16"	"

USED BELTING—Good Condition

470 Ft.	48"	8	1/8"	1/16"	Conveyor
210 "	20"	7	Friction		Elevator

We will cut any of above rolls. Advise desired lengths and widths and we will promptly quote prices. Many other sizes in stock for immediate shipment.

CARLYLE RUBBER CO., Inc.

62 Park Place New York, N. Y.

STANHOPE OFFERS!

AIR COMPRESSORS

BELTED: 355, 528, 676, 1000, 1200 & 1570 Ft.
ELECTRIC: 478, 676, 807, 1302, 1722 & 2850 Ft.
DIESEL: 105, 315, 420, 603, 807 & 1000 Ft.
PORTABLE GAS: 110, 160, 220, 310, 540 & 1300 Ft.
STEAM: 49, 310, 528, 1300 & 2200 Ft.

BUCKETS

50 Skips and Battleship Type, 2 to 6 Yds.
5 Owen & Bucyrus Rock Grabs.
CLAMSHELL: ½, ¾, 1, 1½ & 2 Yds.
ORANGE PEEL: ¾, 1, 1½, 2 & 3 Yds.
DRAGLINE: ¼ ⅜, 1, 1¼ & 2 Yds. Cap.

CRANES & DRAGLINES

5 Ton BROWNHOIST, 30 ft. Boom Gas.
12 Ton NORTHWEST 50 Ft. Boom Gas.
12 Ton KOEHRING 45 Ft. Boom Gas.
16 Ton Speedcrane, Gas, 50 Ft. Boom.
25 Ton BROWNING & 30 Ton AMERICAN Locomotive.
25 Ton LINK BELT K-48 Electric, 70 Ft. Boom.
2½ Yd. Lorain Model 95, Diesel Dragline.

CATERPILLAR SHOVELS

½ Yd. P. & H. Gas & ⅝ Yd. Insley Gas.
⅝ Yd. KOEHRING Gasoline.
¾ Yd., 1¼ Yd., 2 Yd., 4 Yd. & 8 Yd. MARION Electrics.
1 Yd. NORTHWEST Gas & 7/8B2 Steamer.
1½ Yd. BUCYRUS 41B Steamer.
1½ Yd. Lima 750 Diesel
1½ Yd. KOEHRING 601—Gas.

DUMP CARS

46—KOPPEL 1½ Yd. 24 & 30 In. Ga., V Shaped.
15—2 Yd., 3 Yd., 4 Yd. 36 In. Ga.
20—Std. Ga. 12 Yd., 16 Yd., 20 Yd. & 30 Yd. Cap.

BALL, ROD AND TUBE MILLS

6x8 Continuous Pebble Mill.
5x5 Batch Mill.
5'x22" HARDINGE CONICAL Dry Ball Mill.
6'x22" HARDINGE CONICAL Pebble Mill.
4x8, 8x6, & 10x9 Straight Ball Mills.
8'x22" HARDINGE CONICAL Ball or Pebble Mill.
4x16, 5x18, 5x22, & 6x22 Tube Mills.
3½x8 & 5x7 Air Swept Tube Mills.
2x4½, 5x12 and 6x12 ROD MILLS.
4x16 Smidth Tube Mill Silex.
5½x20 Smidth Tube Mill Mang. Linck.
5½x18 P & M Tube Mill Silex.

PULVERIZERS

No. 1 Sturtevant Ring Roll.
RAYMOND Auto. Pulverizer No. 0000, 0 & 3.
RAYMOND Imp Mills No. 4, 32 & 35.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 Ft. Chaser Mill.

SEPARATORS AND COLLECTORS

14 ft., 8 ft. and 12 ft. Separators

ROLL CRUSHERS

36x60 Fairmont Single Roll.
36x16 Allis Chalmers Double Roll.
36x20 Diamond Double Roll.
24x14 Pioneer Double Roll.
24x12 P & M Double Roll.

JAW CRUSHERS

10x8, 13x7½, 14x7, 15x9, 15x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 20x11, 26x12, 30x15, 30x13, 36x30, 36x18, 36x14, 36x15, 36x9, 36x6, 38x18, 36x10, 36x24, 42x9, 48x36, 80x42, 84x66, 36x16, 9x36, 30x10 Gruendler Roller Bearing.

CONE & GYRATORY CRUSHERS

42 in. McCully Mammoth Gyratory.
18 in., 24 in., 30 in., 36 in. and 48 in. Symons Disc.
4—10 TZ Traylor 4 Ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory.
8 in. Traylor T. Gyratory, Telsmith No. 9.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 Inch Superior McCullus.
KENNEDY: Nos. 19, 25, 27, 39 & 49.
16" Traylor.
7 Ft., 5 Ft. and 3 Ft. Symons Cone.

DRILLS

4—SANDERSONS 14 & LOOMIS 44.
7—Ingersoll-Rand Wagon Drills, FB & M2
29T ARMSTRONG Well Drill.

HOISTING ENGINES

7 Gasoline 15, 40, 60 & 100 H.P.
17 Steam 7x10, 8¼x10 and 10x12.
8 Electric 20, 35, 50, 60, 100 & 150 H.P.

HAMMER MILLS

4 Jeffreys: 24x18-A, 36x24-B, 42x36-E & 42x48-B.
Williams No. 1 Jumbo Jr. & No. 6 Universal.
Nos. 4, 6 & 8 Williams Jumbo.
No. 36 Am. Ring Roll.
Gruendler No. 6X.

STEEL BINS

72 Ton BLAW-KNOX 2 Compt.; also 250 ton.
100 Ton BLAW-KNOX 2 Compt.

CEMENT BIN

400 Bbl. Portable BUTLER Bulk Cement Bin with Fuller Full Automatic Electric Push Button Weigh Batcher.

SYNCHRONOUS MOTOR GENERATORS

100 K.W. RIDGWAY 3/60/2200-250-275 volt
150 K.W. GEN. ELEC. 3/60/2200-250-275 volt
200 K.W. RIDGWAY 3/60/2200-250-275 v., 900 rpm.

SLIP RING ELECTRIC MOTORS

52 H.P. GEN. ELEC. 3/60/220-440 v., 1200 rpm.
(3) 100 H.P. GEN. ELEC. 3/60/220-440 v., 900-1200 rpm.

RUBBER HOSE

Air: ¼ in. to 1½ in. Water: ¾ in. to 10 in.

CONVEYOR PARTS

BELT: 1000 Ft. 60 In., 700 Ft. 42 In., 600 Ft. 36 In., 800 Ft. 30 In., 1642 Ft. 24 In., 517 Ft. 20 In., 297 Ft. 18 In., 1000 Ft. 14 In. & 16 In.
IDLERS: 36 In., 30 In., 24 In., 20 In., 18 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 ft. 24 In., 30 In. & 36 In. Sections.

ROTARY DRYERS AND KILNS

36 In. x 20 Ft., 3 Ft. x 30 Ft., 4 Ft. x 30 Ft., 54 In. x 30 Ft., 42 In. x 24 Ft., 5 Ft. x 30 Ft., 5 Ft. x 16 Ft., 5 Ft. x 60 Ft., 6 Ft. x 60 Ft., 6 Ft. x 70 Ft., 70 In. x 40 Ft., 5x30 & 8x84 Double Shell Dryers, 8x110, 7½x100, 8x125 & 10x20 Kilns.

STEEL DERRICKS

GUY: 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
STIFF LEG: 5 Ton 70 Ft. Boom, 15 Ton 100 Ft. Boom, 25 Ton 100 Ft. Boom, 75 Ton 135 Ft. Boom.

LOCOMOTIVES

DIESEL: 7—4½ and 8 Ton 36 & 42 In. Ga.
GASOLINE: 3 Ton, 5 Ton, 8 Ton, 12, 14 & 30 Ton.
STEAM: 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
ELECTRIC: 2 Ton, 5 Ton, 8 Ton, 17 Ton & 40 Ton.

SCREENS

VIBRATING: 2x4, 3x6, 2x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72. HUMMER, ROTEX, NIAGARA & ROBINS. LINK BELT & HURON.
REVOLVING: 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x23, 4x24, 5x30, 5x20, 6x20.

SAND WASHERS AND CLASSIFIERS

4 LINK-BELT A-60 In. Classifiers.
7 ALLEN Cones 4 Ft., 5 Ft., 6 Ft., 8 Ft. TELSMITH 13 Ft. by 2 Ft. 8 In. Screw Washer.

RAILROAD CARS

12—50 Ton Cap. Battleship Gondolas.
7—50 Ton Cap. Flat Cars.

SAUERMAN DRAG AND SLACKLINES

1—¾ yd. Gas 1—1½ yd. Electric
1—1 yd. Electric 3—2 yd., 3 yd. & 4 yd. Electric

42 IN. BELT CONVEYOR

350 Ft. Barber-Greene Sectional Steel Frame Roller Bearing Belt Conveyor. New 1939.

JACK HAMMERS AND DRIFTERS

21 Worthington 169 Drifters.
12 Worthington 180 Drifters.
6 Gardner-Denver 15 Jackhammers.
45 Ingersoll-Rand Drifters S70, N75, X71, DA35.
11 Ingersoll-Rand S49 Jackhammers.

R. R. TRACK SCALE

125 Ton 56' x 10'6" Platform 4 Section.

GRIFFIN MILL

Bradley Giant Griffin Mill.

DIESEL UNITS

96 H.P. Waukesha Hesselman.
2—370 H.P. Chgo. Pneu. RHA45S, 360 rpm.
420 H.P. Sulzer, 1000 rpm.
600 H.P. B. & W., 550 rpm.

CONE CRUSHERS

Symons No. 5½ and 7 Ft.

R. C. STANHOPE, INC.

(Cable Address: "STANEQUIP" New York)
575 6TH AVENUE, NEW YORK, N. Y.
Pennsylvania 6-3565 or 6-3566

RAILROAD EQUIPMENT

Hopper Cars Gondola Cars
Flat Cars Box Cars

Freight Car Replacement Parts.
Relaying Rails and Accessories.
We can furnish nationwide service.
Write—Wire—Phone us your inquiries.

HYMAN-MICHAELS COMPANY
122 S. Michigan Avenue
Chicago

Other Offices
Railway Exchange Building,
ST. LOUIS, MO.
625 Market Street,
SAN FRANCISCO, CALIF.
837 E. Gage Avenue,
LOS ANGELES, CALIF.

FOR SALE

CRANE—Steam McMyler 20 ton capacity, double drum, bucket operating, 50' boom. Good condition.

LOCOMOTIVE—Steam, American 40 ton, four wheel, saddle tank, overhauled.

MIXER—Smith tilting type 56 S. two cubic yard capacity concrete mixer, excellent condition.

E. E. FORT

1119 S. 56th St. Philadelphia, Pa.

RENT OR SELL

4—3-yard Rex Truck Mixers on Mack Trucks.
2—1½-yard Jaeger Truck Mixers—Ford mounted—Excellent condition.
7—4-yard Rex Truck Mixers mounted on Autocar and Mack Trucks—1937-8.
1—80 ton 2 compartment Blaw-Knox Bin.
Concrete Finishing Machine.
Rent new Diesel 315 Compressor and New Tools.

THE JAEGER-LEMBO MACHINE CORP.
127-04 Northern Boulevard
Corona, L. I., N. Y.
Phone: NEwtown 9-7777

CRUSHERS—ELEVATORS—SCREENS SAND WASHERS—PUMPS CONVEYORS

1—7½"x13" CHAMPION No. 3 Jaw Crusher.
3—BRAND NEW Jaw Crushers 9"x15" and 10"x20".
1—9"x16" CLIMAX No. 2 Jaw Crusher.
1—12"x26" CHAMPION No. 6 Jaw Crusher.
1—No. 19 KENNEDY Fine Reduction Crusher.
1—No. 1 STURTEVANT Ring Roll Mill.
1—No. 0 STURTEVANT Ring Roll Mill.
1—48" dia. x 18' Allis-Chalmers trunnion mounted Screen with steel frame.
2—M-20 QUAKER CITY Hammer Mills.
2—3'x5' LINK-BELT Vibrating Screens.
1—No. 2 MEAD Disc Mill.

JOHNSON AND HOEHLER, INC.

Lansdowne, Penna.

FOR SALE
USED EQUIPMENT

10x20 DIAMOND Roller Bearing Jaw Crusher.
10x36 DIAMOND Roller Bearing Jaw Crusher.
15x36 DIAMOND Roller Bearing Jaw Crusher.
2'0"x4'0" single deck DIAMOND vibrating screen.
6 to 8 HP model MRP3 LeRoi Engine.
Model No. U-40 Allis-Chalmers Engine.
4" Sterling Sand pump No. 3558.
60"x20'x0" Revolving screen — Structural frame on wheels.

NEW EQUIPMENT

1—DIAMOND 9x16 Bronze Bearing Jaw Crusher mounted on truck with 15-20 HP engine.
3'0"x8'0" Triple deck Diamond Vibrating Screen.
21-Cu. yard jack leg bin.
Special Price for quick sale.

DIAMOND IRON WORKS, INC., AND THE MAHR MANUFACTURING COMPANY DIVISION
Minneapolis Minnesota

Jaw Crushers—4"x8" up to 66"x84".
Crushing Rolls—16"x10" up to 54"x24"
Gyratory Crushers—No. 3 up to Mammoth
Ring Roll Mills—No. 0, No. 1, No. 1½ and No. 2.
Swing Hammer Mills.
Rotary Fine Crushers—No. 0, No. 1, No. 1½ and No. 2.
Direct Heat Rotary Dryers—3½'x25', 4'x30', 5'x30', 5½'x40', 6'x50', 7'x50' and 8'x50'.
Semi-indirect heat Dryers—5'x30' and 8½'x75'.
Cement Kilns—3' up to 8' diameter.
Hardinge, Marcy & Fuller-Lehigh Mills.
Raymond Mills—No. 00, No. 0, No. 1, No. 2 Roll.
2—6'x12' and 1—4'x10' rod mills.
Tube—Rod and Ball Mills—3' to 6' diameter.
Vibrating Screens—Air Separators.
1—4'x4' and 8'x6' ball mills.
New Dryers built for all purposes.

W. P. HEINEKEN

95 Liberty St., N. Y. Tel.: Barclay 7-7298

"OLD RELIABLE" Owen

in COUNTLESS *SAND and GRAVEL PITS*

We're not exaggerating when we tell you "Old Reliable" OWEN is a byword amongst Crushed Stone, Sand and Gravel Producers everywhere. We can furnish a long list of satisfied users who'll gladly testify "It pays to Own an Owen." For performance sake with long life, why not let us furnish the proper bucket for your particular needs.

THE OWEN BUCKET CO.
6050 BREAKWATER AVENUE, CLEVELAND, O.
BRANCHES: New York, Philadelphia, Chicago, Berkeley, Cal.

Index to Advertisers

*American Cable Div. American Chain & Cable Co., Inc. Inside Back Cover
*American Chain & Cable Co., Inc. 11-Inside Back Cover
*American Pulverizer Co. 110
Anchor Concrete Machy. Co. 94
Atlantic Equipment Corp. 115

Bacon, Inc., Earl C. 84
*Barber-Greene Co. 58-108-110-112
*Bay City Shovels, Inc. 113
*Bethlehem Steel Company 105
Birmingham Rail & Locomotive Co. 117
*Blaw-Knox Co. 100-101
Broadcast Section 114-119
Brooklyn Contractors Machy. Exchange, Inc. 114
*Brooks Equipment & Mfg. Co. 82
*Bucyrus-Erie Co. 9
*Bucyrus-Monighan Co. 9
*Buell Engineering Co., Inc. 54
Burnham, Royal E. 116
Butler Brothers 114

Carlyle Rubber Co., Inc. 119
Caterpillar Tractor Co. Back Cover
*Chicago Bridge & Iron Co. 100
Chicago Perforating Co. 81
*Chicago Steel Foundry Co. 67
Cleveland Wire Cloth & Mfg. Co. 120
Commercial Shearing & Stamping Co., The 94
Consolidated Products Co., Inc. 115
Cross Engineering Co. 111

Davenport Locomotive Works 110
*Deister Concentrator Co. 88
*Deister Machine Co. 81
*Dempster Bros., Inc. 101
*Diamond Iron Works, Inc. 113
*Dixie Machy. Mfg. Co. 80
Dixon Valve & Coupling Co. 80
Dorr Company, Inc., The 72
Dreifus Co., Charles 114
Dunn Mfg. Co., W. E. 104
Du Pont De Nemours & Co., Inc., E. I. 15

*Eagle Iron Works 13
*Easton Car & Constr. Co. 52
*Ensign-Bickford Co., The 4
Equipment Corporation of America 117

Fitler Co., The Edwin H. 88
Flexible Steel Lacing Co. 110
Frog Switch & Mfg. Co. 84
Fuller Co. 46

Gardner-Denver 107
*General Electric 56
Goodyear Tire & Rubber Co. Inside Front Cover
Grey Steel Products Co., Inc. 116
*Gruendler Crusher & Pulverizer Co. 82

*Haiss Mfg. Co., Inc., Geo. 86
Harnischfeger Corp. 111
*Hazard Wire Rope Div. American Chain & Cable Co., Inc. 11
*Hendrick Mfg. Co. 113
Hetherington & Berner, Inc. 108
Hoffman Bros. Drilling Co. 116

Industrial Brownhoist 113
*Iowa Manufacturing Co. 6-7

*Jackson & Church Co. 102
Jaeger-Lembo Machine Corp. 118
*Jaeger Machine Co. 98-99
Jones Foundry & Machine Co., W. A. 70

*Kansas City Hay Press Co. 113
Kent Machine Co. 97

Laughlin Co., The Thomas 78
*Le Tourneau, Inc., R. G. 5-117
Lewis, Harry C. 114
Lewistown Foundry & Machine Co. 113
*Lima Locomotive Works, Inc. 109
*Link-Belt Co. 111
Lippman Engineering Works 115
Ludlow-Saylor Wire Co. 113

Manhattan Rubber Mfg. Div. of Raybestos Manhattan, Inc. 48
*Manitowoc Engineering Works 68
*McLanahan & Stone Corp. 112
McLeod, Alex T. 117
*Merrick Scale Mfg. Co. 58
Miles Mfg. Co., The 100
*Morris Machine Works 66
*Multiplex Concrete Machy. Co. 102

National Industrial Advertisers Association 14
National Supply Company, The 16
National Wire Cloth Co., Inc. 101
New Holland Machine Co. 85
*Nordberg Mfg. Co. 112

Owen Bucket Co., The 120

Page Engineering Co. 79
*Parsons Engineering Corp. 66
Pennsylvania Drilling Co. 116
*Pioneer Engineering Works 1
Plymouth Locomotive Works 87

Quaker Rubber Corp. 8
Quinn Wire & Iron Works 103

Ransome Concrete Mach'y. Co. 103
*Raymond Pulverizer Div. of Combustion Engineering Co., Inc. 60-61
Reed Company, R. F. 101
*Research Corporation 50
*Robins Conveying Belt Co. 18
*Roebling's Sons Co., John A. 77

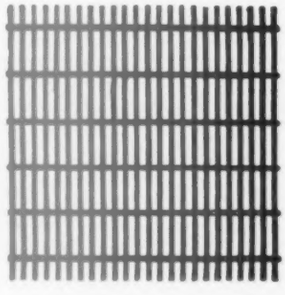
*Sauerman Bros., Inc. 103
Simplicity Engineering Co. 86
*Sly Manufacturing Co., The W. W. 83
*Smidth & Co., F. L. 34
Smith Engineering Works 2
*T. L. Smith Co., The 104
Southern Iron & Equipment Co. 115
Sprout, Waldron & Co., Inc. 112
Stanhope, Inc., R. C. 119
*Streams Mfg. Co. 89
*Strong-Scott Mfg. Co. 71
Stulz-Sickles Co. 108
Sturtevant Mill Co. 44
Superior Engine Division, The National Supply Co. 16

Taylor Forge & Pipe Works 87
Thew Shovel Co., The 3
Thornton Tandem Co. 107
Timken Roller Bearing Co. 10
*Traylor Engineering & Mfg. Co. 109
Twin City Iron & Wire Co. 112
*Tyler Co., W. S., The 79

Union Wire Rope Corp. 112
Universal Road Mach'y. Co. 58
Unverzagt, G. A. 115

Walsh Co., R. P. 117
*Warren Bros. Roads Co. 111
Wellman Engineering Co. 85
*Western Precipitation Corp. 50
Wilfley & Sons, Inc., A. R. 33
Woodstock Typewriters 100

***See also Detail Information in the 1940 Pit and Quarry HANDBOOK**


Rolled Slot

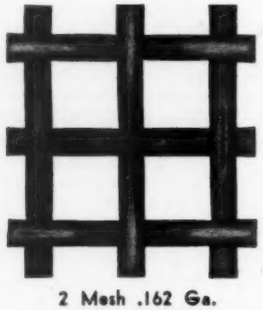
ALLOY No. 2

A super wearing Steel developed to resist the abrasion and vibration of modern screening demands.

"CLEVELAND" SCREENS

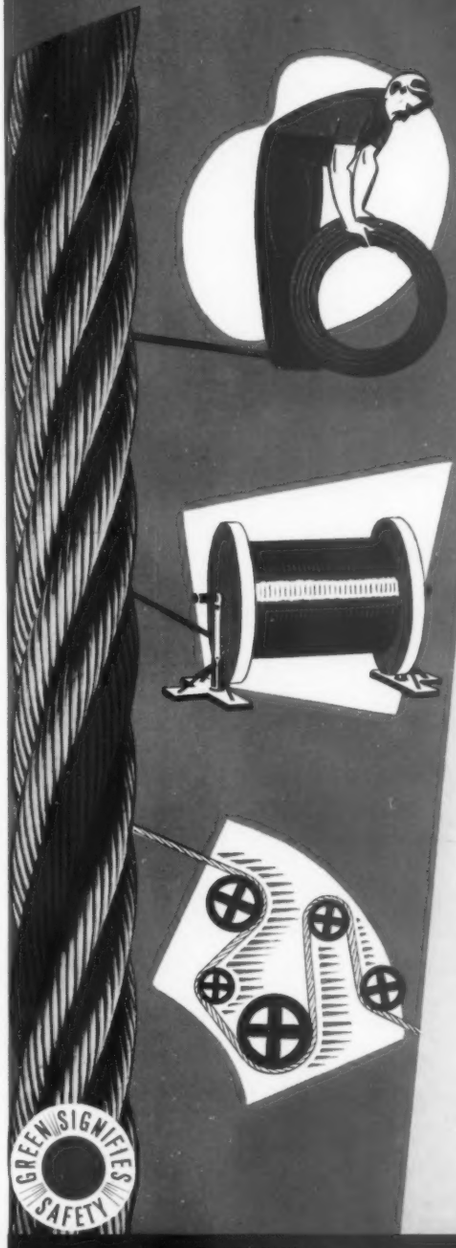
A wire cloth of guaranteed accuracy backed by fine workmanship and an effort to satisfy.

Available in Square Mesh and Rolled Slot. A trial will convince you of the superiority.


2 Mesh .162 Ga.

THE CLEVELAND WIRE CLOTH & MFG. COMPANY
574 E. 78th St. CLEVELAND, OHIO

"DO'S" and "DONT'S" for Re-Roping



The service life of a wire rope begins at the start of the reeving job. Here are a few practical pointers to remember when reeving wire rope.

- If your rope is in a coil—don't pull the rope out of the coil. Roll the coil away from the rope end—allowing the rope to pay out in a straight line.

- If your rope is on a reel—align the reel with the drum and keep a constant tension on the spool to avoid slack in the line. Don't pass the rope around a lead sheave so small it will put a set or crimp in the rope.

- Wherever possible avoid reverse bends. In many installations, of course, reverse bends cannot be avoided. In such cases the life destroying effect of reverse bending can largely be nullified by the use of TRU-LAY Preformed Wire Rope. Because it is preformed, TRU-LAY possesses amazing resistance to bending fatigue and invariably gives far longer service.

- ***On any wire rope problem your nearest American Cable representative can help you.***

AMERICAN CABLE DIVISION
WILKES-BARRE, PENNSYLVANIA

District Offices: Atlanta, Chicago, Detroit, Denver, Los Angeles, New York, Philadelphia, Pittsburgh, Houston, San Francisco

AMERICAN CHAIN & CABLE COMPANY, Inc.

"IN THE MONEY"

LOW FUEL COST

LONG-LIFE CONSTRUCTION

LOW MAINTENANCE

EFFICIENT SERVICE FACILITIES

EASY SET-UP AND OPERATION

POWER, STAMINA AND DEPENDABILITY

THERE'S not just one, but *a lot* of things you can say for your crusher, compressor, shovel, tractor or plant-lighting power when it's "Caterpillar" Diesel. . . . And every one means *profit* — whether it be in the direction of lowering operating costs, increasing production, reducing depreciation, or saving on equipment costs.

Contractors and quarry operators throughout the world have discovered and proved these things for themselves. They know the economy "Caterpillar" Diesel Engines make possible. They see them stand up under severe day-and-night going, week in and week out — taking punishment a less carefully engineered engine could not long withstand. And they've found that when they do need service or replacement parts, these are readily obtainable through the most complete and wide-spread engine servicing facilities in the world.

Isn't it about time that you and your "Caterpillar" dealer got together toward putting this modern money-making power to work for *you?*

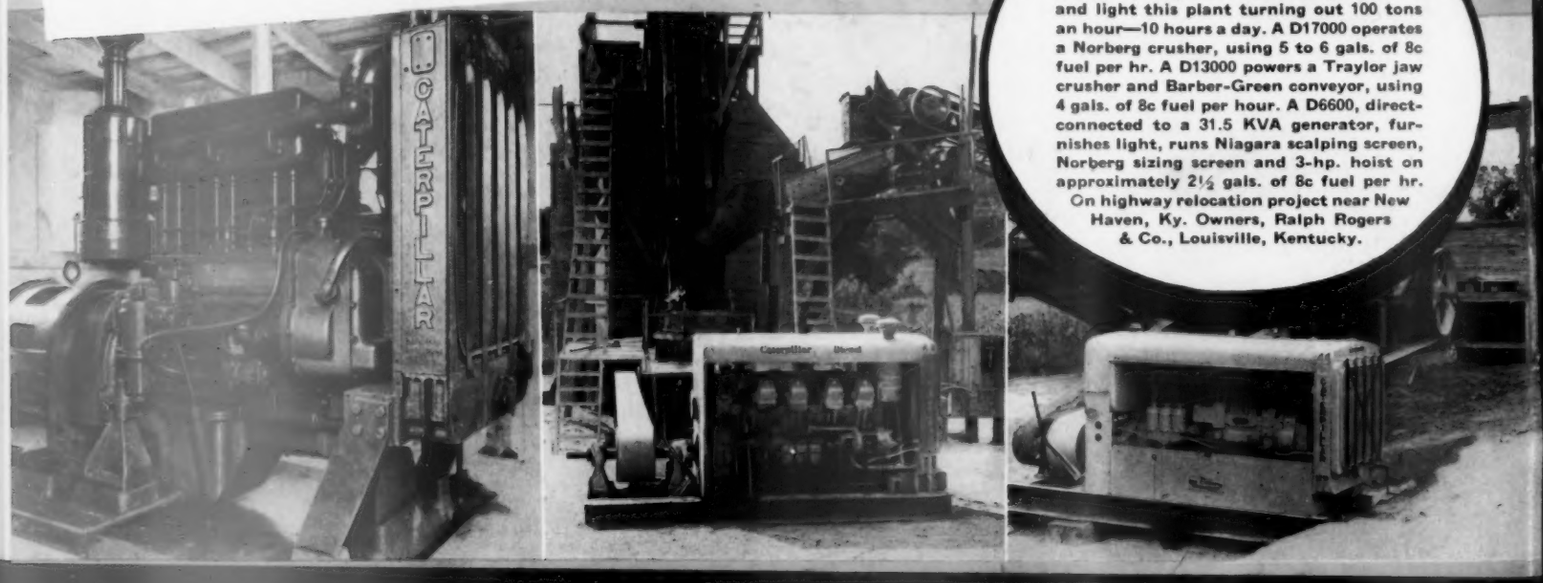
CATERPILLAR TRACTOR CO. • PEORIA, ILLINOIS

CATERPILLAR

REG. U.S. PAT. OFF.

DIESEL ENGINES AND ELECTRIC SETS
TRACK-TYPE TRACTORS • ROAD MACHINERY

SPECIFY "CATERPILLAR" DIESEL POWER FOR THE ENGINE-DRIVEN EQUIPMENT YOU BUY

● POWERED FOR MONEY-MAKING

Three "Caterpillar" Diesel Engines drive and light this plant turning out 100 tons an hour—10 hours a day. A D17000 operates a Norberg crusher, using 5 to 6 gals. of 8c fuel per hr. A D13000 powers a Traylor jaw crusher and Barber-Green conveyor, using 4 gals. of 8c fuel per hour. A D6600, direct-connected to a 31.5 KVA generator, furnishes light, runs Niagara scalping screen, Norberg sizing screen and 3-hp. hoist on approximately 2½ gals. of 8c fuel per hr. On highway relocation project near New Haven, Ky. Owners, Ralph Rogers & Co., Louisville, Kentucky.